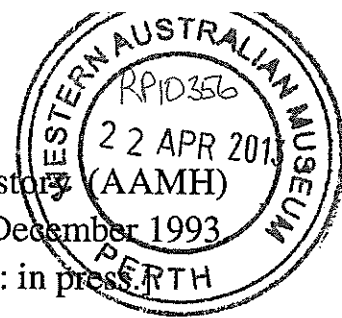


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## **Mother-of-pearl shell cultivation: an early 20th century experiment in the Montebello Islands, Western Australia.**

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One of the most valued maritime resources in the north and north-west of Australia is the pearl oyster, *Pinctada maxima*. Thriving only in warm water, this delicate creature inhabits Australian coastal waters from Exmouth Gulf to the Torres Strait as well as those of the central Indo-Malay region. Known as the silver-lip or gold-lip pearl-oyster, the size of the shell and the thickness and beauty of its nacre make it the best source of mother-of-pearl in the world, at times commanding the highest price on international markets. Long before European colonization of Australia, this lustrous mother-of-pearl shell was a prime resource for Aborigines, particularly those of the Kimberley region. Collected from the tidal mud-flats of this extensive stretch of coast, the shell was used in the manufacture of decorative ornaments which, through networks of exchange, became widespread across Australia.<sup>1</sup> European economic interest in the resource came at a much later date, in the mid 19th century.

The development of the pearling industry in Western Australia was undoubtedly a significant event in colonial maritime history.<sup>2</sup> At a time when a handful of pastoralists were attempting to settle the remote regions of the North-West, the attraction of pearls and mother-of-pearl shell provided an additional impetus for the growth and expansion of North-West ports and towns such as Cossack<sup>3</sup> and Broome.<sup>4</sup> Economically, the industry provided the colony with one of its most valuable export commodities enabling it to achieve greater commercial recognition on

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<sup>1</sup>In these remote localities the ornaments became highly prized and sacred objects: see D.J. Mulvaney, *The prehistory of Australia*, Pelican Books, Australia, 1975, pp. 111, 114. Australian Aborigines are said to have considered the pearls an 'inconvenience' when feeding on north-coast oysters and children used the "worthless" nuisances' as 'marbles': see F. Ward, 'The pearl', *National Geographic*, Vol. 168, No. 2, August 1985, pp. 193–223.

<sup>2</sup>Various popular historical novels, local histories and scholastic theses document the history of the pearling industry in Western Australia. For one of the more comprehensive accounts to date see: M.A. Bain, *Full fathom five*, Artlook Books, Perth, 1982. See also J. Bach, 'The political economy of pearlshelling', *Economic History Review*, Vol. 14, No. 1, pp. 105–114, 1961 and J.P.S. Bach, 'The pearlshelling industry and "white Australia"', *Historical Studies, Australia and New Zealand*, Vol. 10, No. 38, 1962, pp. 203–313.

<sup>3</sup>K. De la Rue, *Pearl shell and pastures. The story of Cossack and Roebourne and their place in the history of the North-West, from the earliest explorations to 1910*, Cossack Project Committee, Cossack, 1979; P.L. Ridgway, (ed.), *Minor ports of Australia*, Australian Association for Maritime History, 1988, pp. 17–21; N.E. Withnell Taylor, *A saga of the North-West Yeera-Muk-A-Doo. The first settlement of north-west Australia told through the Withnell and Hancock families 1861 to 1890*, Hesperian Press, Western Australia, 1987.

<sup>4</sup>Bach, 1961, p. 107 and 1962, p. 203, *op. cit.*; H. Edwards, *Port of pearls. A history of Broome*, Rigby, Adelaide, 1983.

world-wide markets. Politically, the growth of pearling coincided with a period during which the 'neglected colony of Western Australia transformed itself into a viable self-governing community'.<sup>5</sup>

As news spread about discoveries of pearl-shell at Nickol Bay in the 1860s, would-be-pearlers rushed to the North-West, anxious to participate and profit from this new venture. Fears that the industry would be short lived were initially allayed by the continual discoveries of abundantly populated pearling banks, making this one of the world's richest pearling grounds. The pearl oyster, however, is a fragile organism; it is susceptible to attack by a host of enemies, often resulting in long unproductive periods; and, it may take up to five years to reach maturity and reproduce to produce spat (young oysters),<sup>6</sup> thus affecting the rate of renewal of the resource.

During the initial years of pearling, little or no attempt was made, either by the Government<sup>7</sup> or the pearlers themselves, to guard against over exploitation and depletion of the pearling beds. The free-roving pearlers were more concerned with recouping their financial outlays as quickly as possible than with conservation strategies which might prolong the industry for future generations. Many of them wantonly fished the under-size or 'chicken' shell in order to supplement their catch and cover costs.<sup>8</sup>

While reluctant to introduce a leasing system, the Western Australian Government did agree to the temporary closure of the pearling banks at Nickol Bay in the 1880s. It was hoped that a five-year resting period might allow the pearl oyster population to recuperate. This expectation was not achieved, however, as little sign of improvement was noted when the grounds were re-opened in 1886.<sup>9</sup>

Faced with similar problems, the Queensland Government, in 1889, commissioned a scientific investigation by W. Saville Kent, Commissioner of Fisheries.<sup>10</sup> His condemnation of pearlers who removed immature shell was sufficient to induce the Queensland Government to legally restrict the size of shell that could be harvested.<sup>11</sup> In addition, he advocated the

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<sup>5</sup>J. Bach, *A maritime history of Australia*, Thomas Nelson, Australia, 1976 (Pan Books, Australia, 1982), pp. 201 ff.

<sup>6</sup>For summary of pearl larval stages see: Department of Fisheries, 'Department develops oyster culture techniques', *Fins* (Fisheries News), August 1985, Vol. 18, No. 2, pp. 3-6. [From information supplied by R. Dybdahl, Research Officer in Charge of the pearl-oyster programme.]; R. Kardos, 'High-tech pearl oyster or hatching a spat at new jetty', *Broome News*, March, 1985, pp. 19-21.

<sup>7</sup>Friction created over the granting of exclusive rights to fish for pearl-shell in Shark Bay in 1851 to conflicting interests (a local and London firm) led to a decision that the pearl-fisheries should be open to the public: see J.S. Battye, *Western Australia. A history from its discovery to the inauguration of the Commonwealth*. University of Western Australia Press, Nedlands WA, 1924 (Facsimile edition 1978); *Papers Relative to Crown Lands in the Australian Colony Part II (South and Western Australia and Van Diemen's Land)*, HMSO, London, 1853, pp. 83-84.

<sup>8</sup>Bain, *op. cit.*, p. 265.

<sup>9</sup>*Ibid.*

<sup>10</sup>*Ibid.*, p. 266.

<sup>11</sup>*Ibid.*

'cultivation' of mother-of-pearl shell as a means of resolving the problem of exhausted pearling beds.<sup>12</sup>

The participation of 'foreign'<sup>13</sup> pearlery in the pearling industry was viewed with some constraint primarily because the Western Australian Government was fearful that much needed revenue would disappear from the colony in the hands of foreign capitalists and entrepreneurs.<sup>14</sup> On their part, these affluent, 'aristocratic' investors were often resentful that their financial contributions to the colony's inland revenue were not adequately recognized.

The role of the 'foreign' pearlery in the North-West industry did, however, have some benefits: it was due to the initiative of one 'foreign' pearler that the first major attempt at 'cultivation' of mother-of-pearl shell was undertaken in Western Australia at the Montebello Islands. The significance of this pioneering venture, albeit an unsuccessful one, can best be appreciated by the fact that marine biologists only began to achieve success in cultivating pearl oysters on a commercial scale in very recent times.<sup>15</sup>

A visit to the Montebello Islands in August 1985 by the Department of Maritime Archaeology, Western Australian Maritime Museum, provided an opportunity to investigate archaeological sites that may have been associated with early attempts at pearl-shell cultivation.<sup>16</sup> (Fig. 1) Three primary sites were located and surveyed: an Experimental Shell Pool on North Delta Island (Site 1); an Old Pearling Camp on Hermite Island (Site 2); and, encampment sites at Mansion Bay (Site 3) (Fig.2). The historical research undertaken as a part of the project enabled the sites to be identified and interpreted, providing fascinating insights into the social, political, economic and scientific aspects of the early North-West pearling industry.

Two figures emerged as being prominent in the pearling developments at the Montebello Islands—Edwin William Streeter and Thomas H. Haynes. Through the activities of these two men and their associates, a picture of the 'foreign' pearling enterprise in Western Australia unfolds. Of particular interest was Haynes' attempt to cultivate mother-of-pearl shell in a tidal lagoon at North Delta Island.

This paper attempts to trace the background of Haynes' involvement in the Australian pearling industry and assess the significance of his experimentation. In doing so, it seeks to demonstrate the way in which the capital, knowledge, innovation and tenacity of certain 19th-

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<sup>12</sup>Saville Kent proposed that young spat should be transferred to the sheltered channels near Thursday and Friday Islands as opposed to James Clarke who planned to gather shell below the permitted six inches to work his 'cultivation' leases: Bain, *op. cit.*, p. 266.

<sup>13</sup>The term 'foreign' also referred to vessels from other Australian colonies—Queensland, New South Wales etc.

<sup>14</sup>See Bach, 1961, *op. cit.* for discussion of economic and political factors which forced Australian Governments to encourage and regulate the pearl-shelling industry, rather than abandon the beds to foreign interests.

<sup>15</sup>Department of Fisheries, 1986, 'Results of an investigation of mortality of the pearl oyster in Western Australia', *Fins*, Vol. 19, No. 1, pp. 13–14. [Summary adapted from Report 71 'An investigation of mortality of the pearl oyster, *Pinctada maxima*, in W.A.' by R. Dybdahl and D.A. Pass.]; Kardos, *op. cit.*; M. Zekulich, 'Pearl oyster spawn a record: hatchery', *The West Australian*, 13 December 1991, p. 46.

<sup>16</sup>M. Stanbury, *Early pearling activities in the Monte Bello Islands, Western Australia*, Report—Department of Maritime Archaeology, Western Australian Maritime Museum, No. 35, 1986.

century English pearlers were aimed at making the North-West pearling industry a long and viable concern.

As a basis for discussion, the historical events outlined in this paper will be considered in the context of Donald Horne's thesis that, 'Money made us'—that the economic processes that have prevailed throughout Australia's history have helped to shape 'Australia's economic culture'.<sup>17</sup>

Horne claims that:

Australia is one of the most 'economic' nations in the world — almost from the start its 'economy' has been one of its main declared purposes for existing...<sup>18</sup>

The ocean provided Australia with its 'first ideas of a frontier of hope and opportunity'<sup>19</sup> and by the mid-19th century, it became commonplace that Australia was a 'sordid, money-worshipping society'.<sup>20</sup> The 'themes of *the economic* and *the imperial*' [imperial loyalty and worship of 'development'] have been important in ideas defining 'Australia'<sup>21</sup> with the result that:

The Australia conjured up by much of its politicians' oratory can be defined in one simple picture: it has been a white man's resource ripping nation.<sup>22</sup>

As European maritime exploration and commerce spread to the New World, Australasia and the Pacific, the wealth of new lands—'raw materials' or 'natural resources'—were viewed as sources of supply to be exploited for Europe's benefit.

Even people in these other countries sometimes saw them...as places you got something out of...which you then sent off to Europe...Their sense of importance and success was related to the size and value of their exports...the reason for everything else [was] — the Export.<sup>23</sup>

Early exporters were seen as 'plunderers'—their ecological programme being one of 'total annihilation',<sup>24</sup> but by the 19th century 'the cult of the *export* and the *exporter* developed'.<sup>25</sup> From being

...beachcombers and desperadoes, land-grabbers or stake-claimers, exporters had come to represent the essential part of the nation...Exporters derived great honour from being seen as the guardians of Australia's 'natural resources', whose primacy and goodness provided the magic of Australia's existence. But the mysteries of this cult demanded that as well as being guardians of natural resources, they should also be exploiters.<sup>26</sup>

### **The Streeter—Haynes association**

Thomas Haynes' involvement in the Australian pearling industry appears to be the consequence of his association with Edwin William Streeter, the well-known Broome pearler and one of the

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<sup>17</sup>D. Horne, *Money made us*, Penguin, England, 1976.

<sup>18</sup>Horne, *op. cit.*, p. 12.

<sup>19</sup>*Ibid.*, p. 124.

<sup>20</sup>*Ibid.*, p. 43.

<sup>21</sup>*Ibid.*, p. 15.

<sup>21</sup>*Ibid.*, p. 20.

<sup>23</sup>*Ibid.*, p. 24.

<sup>24</sup>*Ibid.*, p. 27.

<sup>25</sup>*Ibid.*, p. 28.

<sup>26</sup>*Ibid.*, p. 29.

London jewellery retail trade's 'more colourful characters'.<sup>27</sup> Streeter, in the preface to his book *Pearls and pearling life*, acknowledges Haynes for writing the chapter on "Pearling Life".<sup>28</sup> Haynes had collected the information over a period of 'almost seven years'<sup>29</sup> which suggests that, either the pair had been acquainted for some considerable time—at least from the late 1870s—or the information was based on Haynes' previous experience.<sup>30</sup>

Born at Wrotham, Kent, in 1834, Streeter's career in the London retail jewellery trade, as outlined by John Culme, was certainly a most 'colourful', innovative and enterprising one.<sup>31</sup> Early in his career, in 1858, Streeter joined a celebrated retail jeweller, goldsmith and pearl merchant, Harry Emanuel, becoming a manager of one of Emanuel's establishments and developing the same flair for publicity. In 1867–68, Streeter set up his own business at 37 Conduit Street (Regent Street), in succession to Hancock, Burbrook and Company Limited, advertising himself as 'goldsmith and diamond merchant to H.R.H. the Prince of Wales'.<sup>32</sup> Achieving a name through introducing 'machine-made jewellery in 18-carat gold'<sup>33</sup> Streeter soon acquired leases of more retail and manufacturing premises in London, including those of his former employer Harry Emanuel at 18 New Bond Street, to which he transferred his business in December 1873.<sup>34</sup> As business expanded, so Streeter's advertisements in all the most prominent newspapers and periodicals grew in size and number. A glittering bonanza of distinctive jewellery, clocks, watches, and novelties by eminent English and European designers were offered to purchasers at a 'moderation of price'.<sup>35</sup>

By the early 1870s, with his retail trade firmly established, Streeter now appears to have devoted more attention to his primary interest—the search for 'raw materials'. Like Emanuel, Streeter was fascinated by precious stones and gems, his books on the subject being well acknowledged.<sup>36</sup> An obituary marking Streeter's death on 11 October 1923 records some of his more adventurous, but often disastrous ventures—most notably in South Africa.<sup>37</sup>

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<sup>27</sup>J. Culme, *The dictionary of gold and silversmiths jewellers and allied traders, 1838–1914. Volume I. The biographies. From the London Assay Office Registers*, Antique Collectors' Club, Woodbridge, Suffolk, 1987, p. 437.

<sup>28</sup>E.W. Streeter, *Pearls and pearling life*, G. Bell & Sons, London, 1886, p. XV.

<sup>29</sup>Streeter, *op. cit.*, p. XV.

<sup>30</sup>Haynes is said to have lived in the Sulu Archipelago (North Borneo) for 'several years' where he would have gained valuable knowledge of the pearl-shell trade: see Streeter, *op. cit.*, 134.

<sup>31</sup>Culme, *op. cit.*, p. 437.

<sup>32</sup>*Ibid.* Streeter later listed himself as being appointed to the 'Princess of Wales & the Duke of Edinburgh & the crowned heads of Europe': See *Post Office London Commercial Directory*, 1873; 1874, p. 1326–27.

<sup>33</sup>*The Times*, 1 Apr. 1868, advt. cited in Culme, *op. cit.*, p. 437.

<sup>34</sup>*The Times*, 22 Dec. 1873, p. 15; *The Standard*, 1 Sept. 1874, p. 49, advts.: cited in Culme, *op. cit.*, p. 438, Note 5.

<sup>35</sup>*Illustrated London News*, Christmas Number, 1874: p.2 advt.

<sup>36</sup>The gold Medal awarded for merit in Arts and Sciences with an order to wear it attached to the Ribbon of the Order of Frederic was conferred in 1879/80 by the King of Wurtemberg as a mark of His Majesty's appreciation of Streeter's book, *Precious stones and gems*: see *The Jeweller and Metalworker*, 1 Feb. 1880, p. 7, cited in Culme, *op. cit.*, p. 438, Note 6.

<sup>37</sup>Professor Tobin, sent by Streeter to investigate the now famous Kimberley Diamond Mines alongside the De Beers, struck barren rock after finding a few diamonds and, thinking he was making a good deal, sold the option to an Australian for £500. The site of the present mine was once owned by the son of Mr Henry Russell who was originally a partner of Streeter's: *The Watchmaker, Jeweller and Silversmith*, Nov. 1923, p. 1889, obit: cited in Culme, *op. cit.*, pp. 437–38.

Whether Streeter was involved with Emanuel in the wholesale gem trade is uncertain.<sup>38</sup> Certainly, Streeter would have benefitted from his previous employer's commercial expertise and business network, and undoubtedly inherited some of his retail clients. Advertising "The Diamond and Gem Store" at 18 New Bond Street in December 1881, Streeter promotes himself as 'Gem Merchant, successor to Harry Emanuel, Bond-Street, London, and Colombo, Ceylon'.<sup>39</sup> Rough and cut gems of all kinds, including pearls, diamonds, sapphires and opals, were available for viewing 'on presentation of card' and it was stressed that:

Mr. Streeter's stores in the different gem-finding countries enable him to sell to the public without the usual intermediate profits.<sup>40</sup>

About this time, Streeter must have been considering his next major venture—the exploration of Eastern and Australian pearling grounds. A decade earlier, in 1872, an ambitious English syndicate, the Australian Fishery Company, had embarked upon a similar enterprise.<sup>41</sup> Poorly advised as to the effects of over production of pearl-shell and the dangers which existed along the North-West coast, the Company was doomed to failure. The glamorous yachts, *Enchantress* and *Flower of Yarrow*, commanded by officers dressed as for a Cowes regatta, were unsuited to the rigors of the pearling industry, which required vessels run on economical lines by experienced men.<sup>42</sup> In Streeter's opinion:

The whole proceeding was a fiasco, and ludicrous to all, except the shareholders. The working expenses alone would have eaten up all the profits, even if a reasonable quantity [of pearl shells] had been obtained. The "Enchantress" was lost<sup>43</sup> and the "Flower of Yarrow" was sold. She traded in the Malay Archipelago for a number of years, running the Spanish blockade in Sooloo several times, and up to the date of her recent wreck was known as the handsomest and fastest craft in the East. The promoters of the scheme came to an untimely end in the wreck of the "Gothenburg".<sup>44</sup>

Mindful of the capital investment and the risks involved, Streeter must have taken care to enlist reliable men for his venture. Thomas Haynes and ex-Royal Navy Lieutenant Edward C.

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<sup>38</sup>Culme, *op. cit.*, p. 438, Note 9.

<sup>39</sup>*Illustrated London News*, Christmas Number, 1881, p. 18, advt.: quoted in Culme, *op. cit.*, p. 437.

<sup>40</sup>*Ibid.* Streeter employed resident agents in the different gem producing districts of the world to assist him in the collection of precious stones and gems: *The Jeweller and Metalworker*, 15 Dec. 1884, p. 332, quoted in Culme, *op. cit.*, 437.

<sup>41</sup>Floated in London with ample capital from among the yachting fraternity at Cowes, including the Prince of Wales, (the future King Edward VII), the Company sent the schooners *Enchantress* and *Flower of Yarrow* in search of pearls: see Streeter, *op. cit.*, pp. 160–61.

<sup>42</sup>*Ibid.*

<sup>43</sup>G. & K. Henderson, *Unfinished voyages. Western Australian shipwrecks 1850–1880*, University of Western Australian Press, Perth, 1988, pp. 150–53.

<sup>44</sup>*The Watchmaker, Jeweller and Silversmith*, 1 June 1888, p. 183, quoted in Culme, *op. cit.*, p. 438, Note 16. The 501-ton steamer RMS *Gothenburg* was subsidized to the tune of £16 000 per year (c. 1874) to call at Port Darwin every two months with passengers and supplies. Departing Darwin on 16 February 1875 after her first visit, the vessel was wrecked on a reef in Flinders Passage, 70 miles from Bowen, in a cyclone on 24 February 1875 with few survivors: see E. Hill, *The Territory*, Angus and Robertson, Sydney, London, 1951, pp. 136–139;

Chippindall, were the principal men involved.<sup>45</sup> On what basis the two men were contracted has not been determined, but Streeter was clearly the main financier of the operation.<sup>46</sup>

Leaving England in January 1882, Haynes and Chippindall established a headquarters on the Island of Siasi in the Sulu Archipelago, off North Borneo. These islands were well known as a source of mother-of-pearl shells and trade pearls with established shipping and commercial links with merchants in Singapore.<sup>47</sup> From his base on Siasi, Haynes was able to observe the activities of the indigenous pearl divers (or Bajans), learn the local dialect and study their customs.<sup>48</sup>

### Prospecting cruise to Australia

While Haynes continued to observe the activities of native pearlers, Chippindall went in search of a suitable vessel for their prospecting cruise to Australian waters. The *Sree Pas Sair*, a wooden schooner of 112 tons, was bought and equipped (at Streeter's expense), and must have been barely a few months old when the transaction took place.

Built in Singapore in 1883 by Fam Ah Hong, the 'delightful schooner' had belonged to the Sultan of Johore.<sup>49</sup> Measuring 85 ft (25.9 m) in length, 20.2 ft (6.16 m) in breadth and 8.0 ft (2.4 m) in depth,<sup>50</sup> the vessel was considered to be 'the finest and most complete pearling vessel afloat'.<sup>51</sup> With a high poop, the accommodation was large and comfortable; it was equipped with eight dinghies each 14'6" (4.4 m) in length, six carried on davits and two on deck; and, drew 7'6" (2.28 m) aft. Sufficient fresh water to last 80 men for three months could be carried on board—an essential feature given the North-West climate and uncertain sources of fresh water.

### First voyage to Australia

Under the command of Captain Chippindall and manned by a crew of Malay sailors, a Chinese carpenter, cook and 'boy', the *Sree Pas Sair* sailed from Singapore in September 1883. Returning to Sulu, Haynes had hoped to recruit some local divers but only seven men were prepared to accompany him, even though he needed sixty. Their reluctance was understandable—they had never worked for white people before, let alone travel away from home. Instead, Haynes recruited 61 divers from the Indonesian island of Solor, duly signing

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<sup>45</sup>Streeter, *op. cit.*, p. XV.

<sup>46</sup>Streeter, *op. cit.*, p. 21. One source suggests that His Royal Highness the Prince of Wales was a shareholder in Streeter's enterprise: see Hill, *op. cit.*, p. 199.

<sup>47</sup>J. Crawford, *History of the Indian Archipelago*, Frank Cass & Co., London, Volume III, 1820 (1967 Edition), p. 445; Streeter, *op. cit.*, p. 135.

<sup>48</sup>Haynes appears to have had a knowledge of the Fijian and Malay languages which suggests he had previously travelled to the Pacific and the East: see Streeter, *op. cit.*, p. 134.

<sup>49</sup>L. Owen, *Cossack gold*, Angus & Robertson, Australia, 1933, p. 40. Lambden Owen, a Warden of the Pilbara goldfields from 1899 to 1929, was personally acquainted with Haynes, maintaining contact with him in England after his retirement.

<sup>50</sup>*Lloyd's Register of Shipping*, 1890-91.

<sup>51</sup>Streeter, *op. cit.*, p. 171.

them on in the presence of the Dutch Governor at Koepang.<sup>52</sup> Accompanied by Harry Streeter, (Edwin Streeter's son), and 'Moss', the supercargo,<sup>53</sup> a total of 78 persons were on board.

Arriving off the north-west coast of Australia, the *Sree Pas Sair* began to examine possible locations for pearl-shell. Admiralty Gulf proved fruitless and, apart from abundant supplies of trepang (*bêche-de-mer*) farther to the east, nothing of any note was located until they reached Darwin.<sup>54</sup> Here, to their pleasure, a ton of good size shell was gathered within a week, news of its discovery being broadcast to Australian cities.

From Darwin, the *Sree Pas Sair* sailed to the Aru Islands and New Guinea, finally being forced to return to Solor to disembark a number of sick Solorese divers. During the trip, they had suffered from the disease beri-beri and several had died.<sup>55</sup> Fortunately, there were no casualties among the Sulu divers, a factor which contributed to their greater willingness to accompany Haynes on his next trip to Australia.

### Second voyage to Australia and visit to the Montebello Islands

By 1 August 1884, the *Sree Pas Sair* had been fitted out in Singapore for a two-year voyage. Haynes recruited the divers he needed from Sulu, proceeded to Macassar and from thence to Cossack, on the north-west coast of Australia. He considered the waters at Exmouth Gulf to be too cold during April to October for naked diving and decided to accompany another boat (not named) to the Montebello Islands. This was the first time the group had ever been dived, and magnificent shells were found averaging 380 pairs to the ton.<sup>56</sup> During six weeks of steady diving, the Sulu men did fairly well, though Haynes considered the Australian Aborigines to be better shell gatherers.

Christmas at the Montebellos, in 1884, found Haynes and his crew very excited: in knee deep water, Chippindall recovered a shell bearing a pearl weighing 40 grains. It was acclaimed as being the finest pearl seen in England for years, being absolutely round and of perfect quality.<sup>57</sup>

With supplies of fresh water running short, Haynes searched the islands for water:

...a likely spot was decided upon, and a well sunk through 20 feet (6.1 m) of rock, below which a fair supply of good water was fortunately found. A beacon [was] erected to guide vessels into the group and to the well of fresh water.<sup>58</sup>

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<sup>52</sup>In 1875, following numerous complaints of ill-treatment of Asian contract labour in Australia, the *Netherlands East Indies and Timor Act* was passed in Batavia empowering the Resident at Koepang to issue licences to those pearl-ers who sought labour: see Bain, *op. cit.*, p. 29. The Indonesian island of Solor is east of Flores.

<sup>53</sup>Hill, *op. cit.*, p. 199.

<sup>54</sup>For an account of the arrival of the *Sree Pas Sair* into Darwin harbour see Hill, *op. cit.*, p. 199; Streeter, *op. cit.*, p. 173.

<sup>55</sup>Beri-beri is a disease which results from inadequate intake of vitamin B1 (aneurine). It is common in Asian countries where the staple diet is polished rice as the polishing of the rice removes most of the vitamin B. In the early phases the disease may manifest as muscle cramps, but in severe cases gives rise to heart failure and death.

<sup>56</sup>Streeter, *op. cit.*, p. 177.

<sup>57</sup>*Ibid.*, pp. 121, 177.

<sup>58</sup>*Ibid.*, p. 178.



In the anticipation of a 'blow', the *Sree Pas Sair* sailed to a creek (possibly Butcher's Inlet, Cossack) for shelter, returning to the Montebellos as soon as the threat of bad weather had passed. It was February 1885, and the weather in the Montebellos was beautiful. The crew, however, were not so well. The disease beri-beri had broken out once again among the Sulu men and half of them had to stop work.

Anxious to safeguard the health of these men, Haynes built a house ashore and substituted flour for rice in the men's diet.<sup>59</sup> To these simple measures he attributed the unusually low mortality. Four men died, and to save the others a premature return was made to their homeland. Three more men died on the voyage, but Haynes tried to maintain morale by busying the men with the care of a deck load of cows and sheep. He introduced them to the art of boxing, which further kept them from brooding over the loss of their comrades.

Following a stopover at Macassar an unfortunate incident occurred: Haynes was attacked by a man (said to be an 'ex-slave') who had earlier injured one of the Macassan sailors. While asleep in a chair on deck, Haynes was struck with a 9 lb (4.08 kg) hand lead causing a fractured forehead, severe facial lacerations and temporary loss of sight and taste.<sup>60</sup> Without a doctor on board, the 'whites' did the best they could with wet bandages, tending him for ten days until they returned to Macassar. Amazed at his recovery, the college of Surgeons applied for details and particulars of treatment, while Haynes himself attributed his return to health to the very lack of medical interference during the first ten days.<sup>61</sup>

### **Modernization of pearling**

At the age of 50, in 1884, Edwin Streeter announced his intention to retire from the retail jewellery trade and offered his entire stock for sale.<sup>62</sup> Rather than retire, however, he appears to have admitted partners into the business, becoming known as Streeter and Company early in 1885. As Culme suggests, this probably

...freed [him] from the immediate problems of running his business alone, and probably bolstered by the injection of capital, Streeter extended his interest in precious stones...

Certainly, he began to invest more capital into his pearling operations. And, his advertised list of imported 'precious and semi-precious stones direct from the principal mines of the world...[now included]...**speciality pearls**'.<sup>63</sup>[Figure 3 about here.] During July to December 1885, the *Sree Pas Sair*, with Chipendall in charge, was reported to have been pearling in Exmouth Gulf working 'eight diving dresses'.<sup>64</sup> Leaving Cossack for Koepang with a few pearls

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<sup>59</sup>*Ibid.*

<sup>60</sup>*Ibid.*, p. 179; Owen, *op. cit.*, p. 40.

<sup>61</sup>Owen, *op. cit.*, p. 41.

<sup>62</sup>Culme, *op. cit.*, p. 437.

<sup>63</sup>*Post Office London Commercial Directory*, 1885, p. 1301. Streeter is now listed as being a Fellow of the Royal Geographical Society (FRGS).

<sup>64</sup>*The West Australian*, 17 Dec 1885, p. 3f; Streeter, *op. cit.*, p. 183.

and 26 ton of pearl-shell, the vessel was not expected to return until the following April, at the end of the cyclone season.

At about this time, Streeter purchased another schooner, the *Telephone*, a vessel of 55 tons.<sup>65</sup> Built in Sarawak in 1882, it was smaller than the *Sree Pas Sair* and served both as a floating station and tender, carrying shell either to Cossack, or direct to Koepang or Singapore. Both schooners were equipped with a diving dress and seven men and serviced 21 boats carrying 150 divers with 21 diving dresses. All the men were signed-on under shipping articles, with good dietary provisions.<sup>66</sup>

With the introduction of modern diving methods, the mother schooners remained at anchor while the smaller vessels (or luggers) cruised for pearl-shell, generally under the command of a Malay. Equipped with a week's supply of rations, they were forced to return to the mother vessel at regular intervals both to off-load their catch and replenish their provisions. Initially, the schooners plied between Cossack, Koepang and Singapore, procuring stores, landing shell and ferrying divers to and from the pearling grounds at the beginning and end of the season.<sup>67</sup>

### Grievances of 'foreign' pearlers

After recovering from his injuries, Haynes continued to play an active role in the pearling industry. In particular, his name appears prominently as spokesman to the Government on behalf of foreign pearl syndicates. Their grievances had been aroused by the passing of a new pearling Act in July 1886<sup>68</sup> which provided for the payment of excise duty on the stores of licensed boats, and on all pearl-shell raised by them. To secure the duty payable, licenses were not issued until duties were paid; ship's papers were withheld when licenses were issued thereby compelling vessels to return to port, whereupon the revenues were collected.

Prior to the 1886 Act, duty could not be collected on the unlanded stores of a vessel fitted out at a port beyond the colony of Western Australia. These 'foreign-going' ships could obtain stores in other colonial ports out of bond and free of duty, while local boats had to pay duty on all their stores under the West Australian Customs Law. The Act was designed, therefore, to place all pearling vessels on an equal footing.<sup>69</sup>

The resultant effects of this new legislation were a growth in illegal trading practices, smuggling of contraband goods into the North-West and loss of Government revenue. Free ports, such as Singapore, issued neither clearances nor manifests which made it difficult for Revenue Officers to check the validity of ships' declarations. Thus, it was easy for 'foreign' vessels to smuggle contraband goods (in particular liquor) and sell them at profit to local pearling fleets out at sea. The appearance of sea-going Chinese providers added to the problem:

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<sup>65</sup>*Mercantile Navy List*, 1889.

<sup>66</sup>Streeter, *op. cit.*, p. 183.

<sup>67</sup>During 1886, the *Sree Pas Sair* was noted to have arrived from Singapore via Koepang in June: *Herald*, 5 June 1886; and again from Koepang in October: *Inquirer*, 27 Oct. 1886.

<sup>68</sup>*The Pearl Shell Fishery Special Revenue Act, 12 July 1886*, 50 Vic. No.7.

<sup>69</sup>Remarks by F. Napier Broome to Lord Rutherford on a petition from members of the North-West Pearl Shell Fleet dated 16 April 1888: Governor's Despatches, Vol.15, p. 322, Batty Library, Perth.

goods were sold to the pearling schooners at prices well below those of Australian ports, thus causing loss of income to local retailers and exacerbating the contraband trade. Furthermore, the Chinese vessels either purchased pearl-shell from the schooners or delivered it direct to Singapore on their behalf for sale to Europe and America.<sup>70</sup> The pearlers, therefore, were able to find ways of evading the payment of pearl-shell export duty, fixed at that time at £4 per ton.<sup>71</sup> Even the regular coastal steamers that plied between Singapore and the Australian ports were known to assist in this customs evasion.<sup>72</sup>

A devastating cyclone in April 1887 wrecked one quarter of the North-West pearling fleet, with large loss of life.<sup>73</sup> The *Sree Pas Sair* survived, albeit dismasted, and was towed to Cossack by the SS *Australind*. The officers on board reported having seen 48 damaged craft lying at Gordon Bay, 'scores of drowned men floating on the sea and miles of flotsam'.<sup>74</sup> Since few of the pearlers had been insured, they now requested statutory assistance and the repeal of either the legislation governing the import duties on unlanded stores or the export levies on pearl-shell.<sup>75</sup>

Despite considerable legal and Parliamentary debate, involving issues related to extra-territorial fishing rights, neither the legislature nor Governor Broome saw fit to accede to the pearlers' requests. They argued that the revenue derived from the pearling industry was necessary to defray the costs of maintaining an expensive revenue vessel, the *Meda*, to control the fishery and defray other incidental costs.<sup>76</sup>

Representing the English shareholders of the North-West Pearl Shell Fleet, Haynes submitted a petition, dated 10 October 1887, direct to Queen Victoria seeking exemption for the pearling industry from the 1886 Act.<sup>77</sup> Not only were the pearlers concerned for their immediate situation, but that of their future. At this time, the Western Australian Constitutional Enabling Bill was being prepared for presentation to the Imperial Parliament. If passed and implemented, the colony would become self-governing, thereby enabling it to raise existing taxes at its own discretion. Fearful of these implications, the pearlers recommended that the northern part of the colony be separated from the south, and remain under Imperial control.<sup>78</sup>

Following strong opposition in the House of Commons, the Enabling Bill was deferred until 1889. Meanwhile, Haynes is said to have

...busied himself publishing a series of pamphlets outlining the pearlers' objections to self-government, their problems of taxation and restriction of fishing on the high seas.<sup>79</sup>

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<sup>70</sup>Bain, *op. cit.*, p. 170.

<sup>71</sup>Governor's Despatches, 1888, Vol.15: 322 ff.

<sup>72</sup>The SS *Australind* was one such vessel: see Bach, *op. cit.*, p. 240; Bain, *op. cit.*, p.171.

<sup>73</sup>Bain, *op. cit.*, p. 172.

<sup>74</sup>*Ibid.*, p. 156.

<sup>75</sup>*Ibid.*, p. 172.

<sup>76</sup>Governor's Despatches, *op. cit.*, p. 322.

<sup>77</sup>Comments by Haynes, accompanying Petition to Queen Victoria, 10 October, 1887, Colonial Secretary's Office (CSO), Vol. 15, p. 332, Batty Library, Perth: cited in Bain, *op. cit.*, p. 175.

<sup>78</sup>Bain, *op. cit.*, p. 176.

<sup>79</sup>*Ibid.*, p. 177. See also comments by Venn during parliamentary debate of the 1889 Pearl Shell Duty Reduction Bill: *Western Australian Parliamentary Debates* (WAPD), 1889, Vol.17, p. 159b, Batty Library, Perth.

His influence in London must have been considerable for he is said to have organized one of the largest meetings ever held in the Colonial Institute to discuss pearling issues.<sup>80</sup>

As a result of the pearlers' disquiet, the Colonial Secretary (Sir Malcom Fraser) visited the North-West to interview pearlers aboard the *Meda* and consider their complaints. By way of a compromise, the excise duty on pearl-shell was reduced from £4 to £2 per ton.<sup>81</sup> Haynes' actions in support of his fellow pearlers were clearly regarded as extremely 'impertinent' by members of the Western Australian Government—not only had the strong arguments put forward by Haynes hindered the passing of the Enabling Bill, but had also presented the colony in an unfavourable light.<sup>82</sup> A delegation comprising Governor Broome, S. H. Parker and Sir Thomas Cockburn Campbell was subsequently chosen to present the colony's views before a select committee in London.

Among the representatives on the select committee were members of the London Chamber of Commerce with vested interests in pearling.<sup>83</sup> As Bain points out, it was significant that Haynes, as Streeter's representative had headed the appeals: Streeter's prominence in the London jewellery trade would have enabled him to enlist support from influential people who could promote his interests in the select committee and the House of Commons.<sup>84</sup> Indeed, Streeter himself was called upon to give evidence.<sup>85</sup>

The colony of Western Australia was granted self-government in July 1890 whereupon the ratification of existing laws relating to fishing in territorial waters became the provenance of the Federal Council of Australasia. By this time, Streeter had already acquired a property on the outskirts of Broome, (Roebuck Downs), established a store and residence, and owned about one-eighth of the pearling fleet.<sup>86</sup> In the same year, he either became joint owner with Viscount Cantelupe, or entered into a business arrangement with him, to use the steam vessel *Sunbeam* on the Western Australian pearling grounds.<sup>87</sup> As the first steam vessel to be employed in the North-West pearling industry, it marked a new era in the industry's mechanization. Unfortunately, the vessel was wrecked off Osborne Island, in Admiralty Gulf off the north Kimberley coast in April 1892—just when the price for West Australian pearl-shell had reached an all time high on the London market—and her usefulness was short-lived.<sup>88</sup>

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<sup>80</sup>WAPD, 1889, Vol.17, p. 161b, Battye Library, Perth.

<sup>81</sup>*Ibid.* pp. 157 ff.

<sup>82</sup>WAPD, *op. cit.*, p. 161b.

<sup>83</sup>Bain, *op. cit.*, p. 178.

<sup>84</sup>*Ibid.*

<sup>85</sup>Report from the Select Committee on the Western Australian Constitution Bill, London 1890, Q/A 3242, p. 192: cited in Bain, *op. cit.*, p. 263.

<sup>86</sup>Bain, *op. cit.*, pp. 228 ff.

<sup>87</sup>G. Henderson, & S. Sledge, *Sunbeam: Solving the mystery, Western Way*, 13, Oct-Dec. 1984, pp. 26-32. See also Hill, *op. cit.*, p. 201.

<sup>88</sup>The price of £225 per ton was the highest for any region and the highest price for some years: Henderson & Sledge, *op. cit.*, p. 32.

### Moves toward the 'cultivation' of mother-of-pearl shell

Between 1890 to 1900 there is little account of Haynes' movements, except that he had been replaced as Streeter's manager by another Englishman, A. W. Coventry.<sup>89</sup> Streeter, on the other hand continued to pursue new sources of gems and negotiate mining concessions with foreign governments.<sup>90</sup> Streeter and Company was registered as a limited liability on 1 May 1895, probably in an effort to raise more capital.<sup>91</sup>

During this period, however, a growing concern had developed with regard to rapidly diminishing supplies of pearl-shell on the pearling grounds. Following a scientific investigation for the Queensland Government in 1889, W. Saville Kent, Commissioner of Fisheries, recommended that 'cultivation' of pearl-shell should be carried out by transferring live shell from outer grounds to natural lagoons in the coral reefs of Thursday Island.<sup>92</sup> In 1893, Saville Kent was asked to visit Western Australia where he carried out surveys and experiments in tropical and extra-tropical regions.

The first experiment was undertaken in a mangrove swamp close to Broome where natural ponds of water 1–2 ft (0.3–0.6 m) deep remained after the retreating tide. Suitable live shells were obtained for him by G.S. Streeter and placed in cultivation frames made of jarrah and wire netting. Within a year, the young shell had increased in size and had begun to propagate, but the full extent of the experiment was not achieved as the frames were destroyed by local Aborigines.<sup>93</sup> Although some spat had attached themselves to the jarrah, the open and exposed nature of the coast, the extreme rise and fall of the tide, storms and willy willies, would have made it extremely difficult to confine the spat and achieve mature growth.

The second experimental location was Shark Bay. Shell was procured from a fleet working near the Lacepede Islands off the north-west coast and transferred to Shark Bay on the *Meda*.<sup>94</sup> At the first attempt, the pearl-shell died long before they reached Shark Bay, in spite of frequent daily changes of water. The second consignment was supplied with a continuous change of water from a hose and survived the journey. While some shell lived a long time and produced

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<sup>89</sup>Coventry appears to have lacked Haynes' humanity towards indentured labourers, acquiring a reputation as a 'cruel master': see Bain, *op. cit.*, pp. 130–134.

<sup>90</sup>Streeter mined sapphires in Ceylon and in 1887 entered into an official agreement with the Indian Government and was granted a monopoly of opening new mines in the ruby district of Burmah; and in 1899 he obtained a concession from the Egyptian Government to search for emeralds in the area of the ancient Zebara Mines near the Red Sea: see Culme, *op. cit.*

<sup>91</sup>Streeter's efforts to finance Streeter & Co by turning it into a limited liability company aroused adverse comments due to his prominent connection with the disastrous Sapphire and Ruby Company of Montana: *The Watchmaker, Jeweller and Silversmith*, 1 Jan. 1896, p. 33, quoting the *Saturday Review*, cited in Culme, *op. cit.*, p. 438. Streeter became chairman and managing director with rights to draw a salary and receive an annual fee: Culme, *ibid.*

<sup>92</sup>W. Saville Kent, *The naturalist in Australia*, Chapman & Hall, London, 1897, p. 206.

<sup>93</sup>WAPD, 1912, Vol. 43 (New Series), 20 Aug. , p. 1196, Battye Library, Perth.

<sup>94</sup>Saville Kent, *op. cit.*, p. 206.

young oysters, the latter were said to have 'acquired characteristics' of the indigenous Shark Bay species rendering the experiment unsuccessful.<sup>95</sup>

### **Mother-of-pearl shell cultivation in the Montebellos**

Whether Haynes' impetus to experiment with the cultivation of mother-of-pearl shell derived from Saville Kent's experiments in Broome in 1893–94 is uncertain, but not an unreasonable assumption. Given the already proven entrepreneurial spirit of the Streeters and their associates, it seems quite in order that their attentions should turn to the preservation and replenishment of the resource in which they had already invested a considerable amount of capital. Unable to raise as much as half the quantity of shell per boat as they had done 20 years previously it was obvious to Haynes that

...a successful demonstration of such cultivation would be a matter of serious importance to the owners of expensive diving fleets.<sup>96</sup>

Haynes began his project on the Montebello Islands in 1901, partners in the venture being said to be A. S. Roe, H.W. Sholl and J.H. Keep.<sup>97</sup> Augustus Roe was a solicitor from Roebourne and son of the first Surveyor General of Western Australia, while 'Horry' Sholl was a relative of the two pioneering Sholls and deemed to be one of the best judges of pearls in the North-West. Both were known acquaintances of the Streeters, 'Horry' receiving a substantial remuneration from his dealings with them while simply lying 'in a cane lounge, with a whiskey by his side, [waiting] for pearlers to bring their gems along'.<sup>98</sup>

In 1902, Haynes was granted an exclusive pearling license for the Montebellos under the *Shark Bay Pearl Fishery Act 1892*<sup>99</sup> and began converting a natural inlet on North Delta Island into a 'Tidal Pool'.

Details of the Montebello operations, including a chronology of events (see Appendix 1), plan and photographs of the 'Tidal Pool' (Fig. 4), and extracts of the 1908 Queensland Royal Commission on the Pearl Shell Industry, are contained in Haynes' report to the Directors and Shareholders of the Montebello Shell Syndicate Limited of 794 Salisbury House, London Wall, London, E.C. in 1912.<sup>100</sup> The completion date of 1904 clearly pre-dates the advertised date of '1906' on the present dam structure and is further ratified by a 1906 Working Plan of the Montebello Islands.<sup>101</sup>

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<sup>95</sup>WAPD, *op. cit.* p. 11196a. The Sunlight Soap Company (Messrs Lever Brothers) engaged Saville Kent with the idea of transplanting shell from Thursday Island to islands occupied by them in the South Seas but this was also unsuccessful: *op. cit.* p. 1197a.

<sup>96</sup>T.H. Haynes, *Mother-o'-pearl shell culture*, 1912, Acc.No. PR 1692, p. 2, Battye Library, Perth.

<sup>97</sup>Bain, *op. cit.*, p. 269.

<sup>98</sup>Owen, *op. cit.*, p. 35. Owen does not mention J. H. Keep.

<sup>99</sup>Letter from Fisheries Dept. to Lands and Survey dated 20 May 1954, Lands and Survey (L&S) File 5460/11, Battye Library, Perth.

<sup>100</sup>Haynes, *op. cit.*; L&S File 5460/11, *op. cit.*

<sup>101</sup>The working plan is based on the Admiralty Survey of the Monte Bellos by Commander J.W. Combe in HMS *Penguin* in 1900. A number of additions, however, are probably the result of information supplied to the Department of Lands and Survey by Haynes himself. In a letter to the Agent General for Western Australia in 1914, Haynes states that in the 1908 licenses his 'alterations and additions to the Admiralty Chart were adopted

From the information contained in the report, it is clear that Haynes' scheme was fraught with difficulties: financial, technical and political. Being an experimental project, Haynes would necessarily have had to attract wealthy investors or sponsors since there could be no immediate expectation of a marketable product, and thus no quick return on initial capital outlay. 'Horry' Sholl had a reputation for turning 'everything he touched to gold'.<sup>102</sup> He was clearly a speculative businessman and just the sort of person Haynes would have needed to get the project off the ground. As the diary of events indicates, however, lack of funds, Government fees and technical errors in the designation of the Crown Lease respecting the area of an incompletely surveyed group of islands were probably the greatest hindrances to the project's success.

Believing his cultivation scheme to be one of 'national importance', Haynes obviously anticipated Government cooperation. Yet, he appears to have had nothing but obstacles put in his way. Security of tenure was of paramount importance to any venture involving high capital investment. But the Government was unprepared to assure any rights to renewal of leases or compensate for any improvements or developments on expiry. As a result, Haynes was placed in a difficult position with regard to attracting new investment funds and procuring the long-term services of biologists to assist in the experimental scheme.

Although Haynes claimed to have reared young shell in the Tidal Pond in 1910, there was considerable scientific debate as to whether his methods were reliable and whether the young oysters were true mother-of-pearl oysters, *Pinctada maxima*, or 'bastard' shell, *Pinctada albina*. Haynes had clearly taken the trouble to inform himself of marine biological work being undertaken elsewhere in the world—the Red Sea, Ceylon and 'Lower Burmah'—and expressed resentment of scientists who had sought information about the scheme at the Montebello Islands but who were not prepared to offer reciprocal advice. He states that

...there is no disposition to recognize that any good work can be achieved by anyone outside the charmed circle of science, and although so-called scientists are not loth to appeal to outside sources when they are in quest of material or information, they are averse to rendering any reciprocal service...<sup>103</sup>

Haynes was confident that artificial assistance to the Australian pearl-shelling industry had to come. He was particularly anxious, therefore, that the Australian authorities purchase the facilities at the Montebello Islands in order that his efforts, expenditure and experience would not go to waste. Similar feelings had been expressed earlier in the 1908 Queensland Commissioners' Report into the Pearl Shell Industry. It was the Commissioners' belief that 'the cultivation (of pearl shell) in shallow waters [would] become the system of the future'.<sup>104</sup>

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as that chart was not complete' (Letter dated 1914, L&S File 5460/11). Shown clearly on the north-west side of Campbell Island (now North Delta Island) is a small inlet marked 'Pond', which corresponds to the location of the site investigated in 1985: Lands and Survey Working Plan, 1906, 111/300, Department of Land Administration (DOLA), Perth.

<sup>102</sup>Owen, *op. cit.*, p. 36.

<sup>103</sup>Haynes, *op. cit.*, p. 7.4.

<sup>104</sup>*Ibid.*, p. 14.

Furthermore, they believed that, had the experiments initiated by Saville Kent in 1889 been continued, there would probably have been no need to appoint a Commission of inquiry. Unfortunately, despite these predictions, the Federal Government did not accede to Haynes' request, reasoning that

... the Government has not yet determined whether it may take any active part in the control of the Pearl Fisheries' [i.e. in the sense of promoting the improvement of the industry].<sup>105</sup>

The experimental work at the Montebello Islands was discontinued. Haynes' house on Hermite Island was wrecked by a hurricane in February 1911, and in August he returned to England, where he later retired to Littlehampton, Sussex.<sup>106</sup>

Edwin Streeter had announced his intention of retiring in 1904, and by early 1905 the premises and goodwill of Streeter and Company Limited were transferred to the United Investment Corporation on behalf of Lacloche Frères of 15 Rue de la Paix, Paris, with branches in Madrid, San Sebastian, Biarritz and Nice.<sup>107</sup> The residue of the stock was sold shortly afterwards at Christie's. By 1913 Streeter and Company Limited are listed as having been transferred to Kirby and (Henry William) Bunn.

Edwin Streeter died in 1923 leaving an estate of £8 493—a small reflection of the profits and losses he must have sustained in the course of his adventurous, albeit frequently disastrous business career.

### **The Montebello evidence**

The Montebello Islands comprise a group of more than one hundred islands, extending for about 22 km between latitude 20°–20°33' south and centred on longitude 115°33' east. Most of the islands are very small, the largest being Hermite, Trimouille and North West Island. Vegetation is sparse and rainfall minimal, except during the cyclone season; fresh water is only available in soaks or by digging wells in sandy hollows.<sup>108</sup> Numerous lagoons, inlets and deep water passages separate the various islands making navigation a hazard, but ensuring some shelter for vessels during north-west cyclones.

#### **OLD PEARLING CAMPS, HERMITE ISLAND**

Evidence of two old pearling camps exist on Hermite Island: one (Site 2) is located on a high promontory at the southern entrance to Faraday Channel, overlooking Home Lagoon to the west and Mansion Bay to the south (latitude 20°26.8' south, longitude 115°32.4' east); and the other (Site 3), some 0.55 km to the south-west, on the shore of Mansion Bay.

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<sup>105</sup> *Ibid.*, p. 10.

<sup>106</sup> Owen, *op. cit.*, p. 40.

<sup>107</sup> Culme, *op. cit.*, 438.

<sup>108</sup> J.W. Combe, *Australia—N.W. coast. N.W. Cape to Ashburton RDS-Additional and revised sailing directions to Australian directory, Vol. III 3rd Edition 1895.... From HMS Penguin 1900*. Original Document OD 101, Enclosure to S57/1901, p.2, The Hydrographic Department, Ministry of Defence, Taunton. [Copy held in the Department of Maritime Archaeology.]



Two photographs taken by P.D. Montague in 1912 were located in the Maritime Archaeology collection and assisted in the identification of the sites. One is a picture entitled 'Remains of Mr. Hayne's House, Hermite Island' (Fig. 5), taken by Montague following its damage in the 1911 cyclone. The other shows a substantial camp site close to the water's edge (Fig. 6). Montague makes little mention of the pearler's encampments in his reports except to comment on a 'damaged bag of rice left by pearlery at their last season's encampment'.<sup>109</sup> He does note, however, that many of the 'snake-wood' bushes on Hermite Island

...have had their foliage burned off them by the pearlery, so that they may dry thoroughly and furnish fuel for future "lay-up" seasons.<sup>110</sup>

Given the close proximity of the two occupation sites, and detailed interpretation based on the archaeological and available documentary evidence, it is suggested that Haynes was associated with both sites.<sup>111</sup> The camp site at Mansion Bay is accessible by small boats and relatively close to inland wells; it would have been a good place for Haynes to set up camp to nurse his sick divers in 1885. Quite likely, the same camp area was used intermittently by other pearlery well into the 1900s.

Whether the house shown in Montague's picture was the original 'house' built by Haynes in 1885 has not been confirmed; archaeological remains at the site are compatible with an occupancy dating from the late 1890s.<sup>112</sup> The house was clearly a most substantial dwelling with provision for rain-water catchment, filtration and storage in two below-ground cement-lined reservoirs.<sup>113</sup> There is evidence of fenced enclosures around the homestead, possibly for keeping livestock—poultry, sheep or cows—to ensure a good source of fresh food.<sup>114</sup> Various types of glass food and medicine containers, tin cans and liquor bottles indicate that preserved foods, dietary supplements,<sup>115</sup> beer, wine and spirits were consumed.

During his stay at the Montebellos, Haynes collected various zoological specimens which he sent to the British and Western Australian Museums, resulting in Montague's investigative visit to the islands in May–August 1912 and his awareness of Haynes' attempts to cultivate mother-of-pearl shell on the north-west side of Campbell Island (now North Delta Island).<sup>116</sup>

#### THE EXPERIMENTAL SHELL POOL, NORTH DELTA ISLAND

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<sup>109</sup>P.D. Montague, The Monte Bello Islands, *Geographical Journal*, Vol. 42, No.1, 1913, p. 40.

<sup>110</sup>Montague, *op. cit.*, p. 38.

<sup>111</sup>Stanbury, *op. cit.*

<sup>112</sup>*Ibid.*

<sup>113</sup>Typhoid was rife in Cossack during the late 19th century and the cleanliness and protection of water supplies was essential to prevent the spread of this disease: see Owen, *op. cit.*, p. 28.

<sup>114</sup>Cows and sheep were aboard the *Sree Pas Sair* on its early voyages to the Monte Bellos, mutton being considered an essential part of the diet (to reduce the incidence of 'beri-beri'): see Streeter, *op. cit.*, p. 183.

<sup>115</sup>One proprietary medicine bottle contained 'Clarke's World Famed Blood Mixture', a well known iron tonic imported from England from the early 19th century until as late as World War II: Stanbury, *op. cit.*

<sup>116</sup>P.D. Montague, 1914, A report on the fauna of the Monte Bello Islands, *Proceedings of the Zoological Society, London*, Vol. 2, 1914, p. 625.

Some of the finest pearls and pearl-shell harvested along the north-west coast came from the Montebello Islands. For this reason, they were considered suitable as a site for mother-of-pearl shell cultivation. Familiar with the environment, it probably did not take Haynes long to select and enlarge the protected natural inlet on the north-west coast of North Delta Island as a site for his experiment.

Being tidal, the inlet dried at half-tide but when full, contained 7 ft (2.13 m) of water. This ebb and flow of water was both an advantage and a disadvantage: on the one hand, the changing water provided a regular (and necessary) supply of nutrients and planktonic food organisms, and maintenance of normal water temperature and salinity levels; on the other, it meant that floating spat would continually float out of the inlet to the sea beyond.<sup>117</sup> An enclosure was essential to confine the spat. The way in which Haynes sought to overcome this problem is indicated in a plan of the 'Tidal Pool' included in his report (Fig. 4).

A masonry 'dam' was constructed across the narrow entrance to the inlet at the centre of which was a flood-gate or 'flume' operated by a winch. Excess water could be removed at ebb tide by filtration through the porous rock bottom, leaving space for the admission of sea-water every flood tide. While water could enter the pond it was not allowed to escape, thereby preventing the loss of floating spat.

In recent years, the masonry wall has been reconstructed by pearling lessee R.P. Morgan who attempted to conduct his own experiments in the pool.<sup>118</sup> An inscription marked on the top of the present sluice plate (Fig. 7) serves to identify the structure and reads:

THE MONTIBELLO	CONSTRUCTED 1906
EXPERIMENTAL	CONTINUED 20 SEPT 1981
SHELL POOL	BY R.P. MORGAN & CREW

A stone-faced embankment was built to cut off the shallow margin of the pond, presumably to maintain a certain level of water at low tide. Several pipes and conduits through the embankment allowed any overflow to pass into the shallow backwater. The dense growth of mangroves which now obscure any sign of the embankment were originally cleared away; firstly, to maintain the cleanliness of the pool, and secondly, to reduce the natural habitat of marine creatures that might prey upon the immature oysters, particularly after spatfall when they attach themselves to some fixed object.<sup>119</sup>

The plan of the 'Tidal Pool' indicates the course of the current within the enclosure. Movement of water appears to have been an important factor in the life-cycle of the pearl-oyster, probably being necessary to maximize the young spat's chances of locating a fixed object on which to grow. It is mentioned in the report that 'a great many young ones...were collected in the

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<sup>117</sup>The fertilised egg of the pearl-oyster develops a tiny shell that is carried by water currents until it reaches something favourable to which to attach itself.

<sup>118</sup>For a more detailed description of the present day remains see: Stanbury, *op. cit.*

<sup>119</sup>Haynes, *op. cit.*, p. 5.

crevices of the stone walls',<sup>120</sup> but no mention is made of any artificial fixed objects being placed in the pool.<sup>121</sup> The masonry dam and embankment, appear to have served both as containment structures as well as anchorages on which the young pearl-oysters could develop. Photographs of the masonry dam taken by Museum staff in 1971 and 1978 (prior to reconstruction) are shown in Figures 8 to 9. Those taken at low tide clearly show the heavy growth of oysters and other marine creatures on the lower dam wall. Numerous imported and Australian liquor bottles in the vicinity of the pool substantiate a 19th to early 20th century date for the site.

### **Significance of Haynes' experiment**

At the time of Haynes' experiment, very little was known about the biological or physical aspects concerning the reproductive life-cycle of the pearl-oyster *Pinctada maxima*—the breeding seasons, the time taken for larvae to settle and grow, the nutritional and other physical requirements.<sup>122</sup> Pearl-oysters appeared to migrate at will, certain spots left rich in shell at the end of one season were found to be bare six months later.<sup>123</sup>

Haynes was faced with many unknown and natural variables. Any attempt at cultivation in the Montebello Islands would have to contend with cyclones, which could upset the physical environment in the pool. Even if Haynes had managed to contain the spat, there was no certainty that they would get the right food for planktonic existence, or for continued growth and development after settlement. As nutrients flowed into the pool, the larvae of other species of pearl shell would have entered too, possibly being more suited to the conditions. The Montebello Islands lie near the southern end of the geographical range for *Pinctada maxima*. While it does live in shallow water, it is more abundant at depths of 30–40 ft (9–12 m) where there are different localised regimes of water temperature, turbidity flow and salinity. Haynes clearly hoped that by impounding the pearl-oysters he could maximise the settlement of spat by increasing the density in that place.

Given the primitive conditions Haynes was operating with, the financial, political, environmental and biological constraints, it is little wonder that the experiment was deemed to be a failure. Nevertheless, it marked the beginning of a long series of experimental work by pearlery and marine biologists seeking to understand the resource on which the prosperity of North-West communities depended.

Until 1957, when cultured pearl production commenced at Kuri Bay, mother-of-pearl was the main focus of the North-West pearling industry, pearls being regarded as a valuable by-

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<sup>120</sup> *Ibid.*, p. 13.

<sup>121</sup> A number of 44-gallon drums and posts now evident in the pool are of recent origin.

<sup>122</sup> I am indebted to Shirley Slack-Smith, Curator of Molluscs, WA Museum for biological information and opinions concerning Haynes' experiment.

<sup>123</sup> Streeter, *op. cit.*, p. 101.

product.<sup>124</sup> But, when millions of dollars could be made in pearls, trade in shell declined. The pearl-oyster is essential for the modern cultured pearl industry to survive.<sup>125</sup> But, it continues to test scientific ingenuity. Excessive mortality of pearl-oysters following removal from natural beds has had a serious impact upon the industry since 1974, both in terms of direct financial losses for operators; and the removal of more oysters from natural beds than would otherwise be necessary.<sup>126</sup>

Rotational closure of vulnerable intertidal breeding grounds has been essential, even in more recent times, to allow pearl-oyster stocks to regenerate, and to prevent the wholesale removal of shell from accessible areas by 'pedestrian traffic'—unauthorised inter and intrastate dealers, visitors and so on, who strip the reefs.<sup>127</sup>

In 1982, the Western Australian Department of Fisheries began a Pearl Oyster Hatchery Project with the aim of artificially propagating the tropical oyster *Pinctada maxima* on a commercial scale.<sup>128</sup> Even with sophisticated laboratory conditions, only minor spawnings were achieved in 1986–87 with one batch surviving to settlement stage in 1987–88.<sup>129</sup> Finally, in December 1991, pearl industry history was claimed for Western Australia: a Broome hatchery recorded a spawning of eight million fertilised pearl-oyster eggs, believed to be the biggest single fertile spawning ever achieved by a licensed commercial hatchery.<sup>130</sup>

## Conclusions

John Bach in his book *A maritime history of Australia* states that:

If it is the essence of the historian's task to reveal a continuity in the affairs of men then he will find few fields of human activity in which the past and the present are linked more inseparably than they are in the maritime world.<sup>131</sup>

Until comparatively recently, the history of the pearling industry in Western Australia was a neglected area of research. Yet, this maritime industry has the potential to demonstrate a continuity from the past to the present extending over several thousand years.

This paper has focussed on the activities of two prominent figures in the early Western Australian pearling industry—Edwin Streeter and Thomas Haynes—in an attempt to rationalize Haynes' experimental attempt to cultivate mother-of-pearl shell at the Montebello Islands. Viewed in the context of Horne's thesis, Streeter and Haynes clearly did not fall into the

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<sup>124</sup>See Ward, *op. cit.*, p. 212; also D. Doubilet, 'Australia's magnificent pearls,' *National Geographic*, Vol. 180, No. 6, December 1991, pp. 109–123.

<sup>125</sup>Pearl production is based on the utilisation of naturally grown oysters that are removed from their natural beds and then transported to lease sites where pearl formation is induced artificially: see Department of Fisheries, 1986, *op. cit.*, p. 13.

<sup>126</sup>*Ibid.*

<sup>127</sup>In response to the over-exploitation of pearl-shell, certain areas around Broome were closed to shell collecting for a period in 1986: Kardos, *op. cit.*, p. 21.

<sup>128</sup>Department of Fisheries, 1985, 1986, *op. cit.*

<sup>129</sup>Slack-Smith, *op. cit.*, pers. comm.

<sup>130</sup>Zekulich, *op. cit.*

<sup>131</sup>Bach, *op. cit.*, p. 438.

category of outright ‘plunderers’—roving pearlers who were out to ‘get rich quick’ regardless of the devastation they might effect on the pearl-oyster population. Rather, they appear to have had a more enlightened attitude. Certainly, Streeter was critical of the ‘ludicrous’ way that earlier English pearling syndicates had gone about their business with little knowledge of the resource, or the strategic prerequisites for successful operation.

Streeter was a Member of the Anthropological Institute of London, which perhaps explains his association with Haynes. Both men were well travelled, and Haynes’ empathy with the indentured Sulu and Malay divers—his knowledge of their language and customs—would have been of particular benefit during the early phase of their Australian pearling enterprise. By observing the divers at work in their indigenous pearling grounds, Haynes would have undoubtedly learned something about the local habitats of the pearl-oyster which he could apply to the Australian situation. Similarly, Streeter’s interest and knowledge of precious stones and gems went beyond the economic. Indeed, it was perhaps his continual search for the rare and beautiful gems with which he endowed his collection and jewellery that led to many of his failed endeavours. Regardless, he appears to have had a reputation for good business management, and in Haynes and Chipindall he clearly had two reliable managers of his Australian venture.

Having established a base at the Montebello Islands, and in Broome, added to his pearling fleet and introduced modern diving equipment, Streeter had made a substantial investment into the pearling industry in Western Australia. While he was exporting a natural resource, it was clearly in his interest to ensure the perpetuity of that resource—to become a ‘guardian’ as well as an ‘exploiter’.

While it can be argued that Streeter and Haynes were effectively protecting the vested interests of pearl merchants, dealers and shareholders in London, Australia and elsewhere, Haynes’ attempt to cultivate mother-of-pearl shell at the Montebello Islands was significant in that it drew the attention of the State and Federal Governments to the fragility of the pearl-oyster resource: it was **not** an ‘illimitable resource...waiting for stimulation’, as Deakin expounded in the 1903 election.<sup>132</sup> It was a resource that needed to be nurtured and propagated if the pearling industry was to survive. But, at the time, the Federal Government of the day could not see beyond the immediate revenues that accrued to it from excise duties, taxes, license fees, and so on. It was left to private individuals, ‘exploiters’ like Haynes, to explore the ‘magic’ of the pearl-oyster—the mystery of which has only just begun to be understood.

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<sup>132</sup>Home, *op. cit.*, p. 29.

**Appendix 1: Chronology of events relating to the Montebello experiment.**  
 [From Haynes, 1912.]

		Expenditure.
	1902. April. An exclusive pearling license for the Montebello sea area granted for 14 years, expiring 1916.	£2,000
	1903. London partner joined to finance the undertaking, but died soon after.	
	1904. November. Tidal Pond completed in time for spatting season.	3,000
	1905. October. Place closed for lack of funds.	
Closed for want of funds.	1906. December. Release by late partner's Executors. New syndicate being formed.	
	1907. January. Lease cancelled by Government on account of error in measurement. October. Official notice of £450 assessment for arrears of rent for excess over legal area.	500
Closed owing to lease being declared invalid.	1908. June. Issue of four new leases in place of the old one — for 14 years expiring 1922.	
	1909. May. Formation of Montebello Shell Syndicate. November and December. Pond closed for spatting.	
	1910. November and December. Pond closed for spatting. Young pearl shells bred.	1,300
	1911. February. Homestead wrecked by hurricane. August. Return to England.	
	Approximate total expenditure	... <u>£6,800</u>