

**Lucy Cranwell Lecture: 4 April 2019, at
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Sir Joseph Banks and his Florilegium

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First of all, I would like to thank the Museum, in particular Ewen Cameron, for the honour of being invited to give the Lucy Cranwell lecture – and to Jack Hobbs and Mark Large for their efforts to facilitate this.

As you have heard, Lucy Cranwell was a pioneer in the New Zealand botany of the last century, Professor Wall commemorating Lucy Cranwell and Lucy Moore as the ‘tramping girls of Auckland’. Her fundamental work in this place (the Museum) has already been alluded to, besides her importance in phycology and the war effort, and her role in promoting conservation particularly in the light of depredations of possums and other exotic animals, and her popular writing in newspapers. Her work on palynology both here and in Hawaii, learned from the Scandinavian giants of the subject, was groundbreaking.

This evening, I want to talk about another European pioneer, Joseph Banks, his plant-collecting on *Endeavour* 1768–1770 – and what happened after that: one of the most expensive botanical projects ever, still incomplete after almost 250 years, but with the plates, at least, now published: *Joseph Banks's Florilegium*. A central part of this concerns the botany of New Zealand, for which the collections made here then are a kind of benchmark as Patrick Brownsey has pointed out. But it would be churlish of me, if not preposterous, as a foreigner, to attempt to lecture such an august audience of local botanical expertise on the New Zealand flora, so what I want to try to do is put that centrepiece in the context of botanical knowledge of the time – and its significance since.

But, of course, what Banks's team bumped into was not at all new for the Polynesians, who settled here in what Europeans call the Middle Ages – and even more markedly the case for the aboriginal people of Australia – and indeed many Asian peoples trading with them for hundreds and perhaps thousands of years before Europeans appeared in the Pacific.

The first great phase of European learning about New Zealand's and Australia's plants was certainly going to be down to the British – who, indeed, were also to seal the fate of the two places. This was ultimately to be due in large part to the actions and influence of Joseph Banks.

The Dutchman, Abel Tasman, had of course visited both Tasmania and New Zealand in the summer of 1642–1643. Although his crew gathered some potherbs and in Tasmania noted the gigantic gum trees there, they seem not to have collected plant samples. Indeed, the oldest surviving herbarium specimens from Australasia are said to have been made only almost a century later by the Dutch Willem Hesselsz de Vlamingh's *Geelvinck* in Western Australia in 1697. The main purpose of the Vlamingh voyage was to include searching for anything of economic interest. But his personal account, only known in a French translation, was not published until 1998 and his samples of cypress timber, tea-tree oil and gum have disappeared, though on 4 February, he used a cypress log at Cape Inscription on Dirk Hartog Is., Shark Bay, to hold a pewter plate inscribed with details of his visit; the log is now in the Western Australian Maritime Museum and can perhaps be considered the oldest documented botanical specimen collected in Australasia.

But, only with the first voyage of Lieut. James Cook and his avid gentleman-botanist supercargo, Joseph Banks, with his curator-librarian, Daniel Solander, was any real progress made. Banks (1743–1820), the only son of a rich country land-owner, had such a passion for botany that, as an undergraduate at Christchurch, Oxford, he brought in a botany tutor – from Cambridge. In January 1767, he returned from an expedition to North America and spent much of the rest of the year as a dilettante naturalist and antiquarian – besides setting up house in London. The furnishing for that house included work by an upholsterer, Stanfield Parkinson, whose brother, Sydney, was employed by Banks to draw animal specimens that Banks had brought back from Newfoundland.

Sydney Parkinson (?1737–1771) was from a Scottish Quaker family and, although apprenticed to a wool draper, may also have been trained in natural history illustration in Edinburgh. In 1765 or 1766, he probably moved to London and was engaged by James Lee (1715–1795). Like Parkinson, Lee was from Scottish Quaker stock and in 1745 he joined Lewis Kennedy (1721–1783), a florist and nurseryman, in setting up in Hammersmith to the west of London, a vineyard on what is now the site of Olympia, the Vineyard Nursery, known as Kennedy and Lee. In Lee's network was another Quaker, Dr John Fothergill, physician and naturalist.

In 1762 Fothergill set about making at Upton Park, Stratford, Essex, what was to become a botanic garden, which, according to Banks, was to become second only to Kew. Fothergill was particularly interested in plants of medicinal or other economic worth and on the 30 acres, which was later expanded, he built greenhouses and stovehouses some 260 feet long, abutting his house. He supported plant-collectors overseas and amassed a collection of some 3400 species 'from warm countries'. As the more interesting plants flowered, he had them painted. This whole enterprise – living collections, artist and plant-collectors, had an enormous effect on Banks and seems to have been one of the spurs to exotic travel and eventually his taking charge of the Royal Garden at Kew – and thus setting the ethos of all botanic gardens ever since.

In 1767, the Royal Society, of which Banks was a Fellow, recommended that the government be petitioned to send a ship to observe the Transit of Venus across the sun in the 'South Sea', an observation to enable the calculation of the distance from the earth to the sun as an aid to navigation. Even before the full purpose of the voyage had been articulated, leave alone a ship and commander chosen, Banks was committed to join the expedition. He persuaded the Council of the Royal Society and the Lords of the Admiralty that he should be a supernumerary, concentrating on natural history – and paying his own way.

So persuasive was he, that, building on approval for carrying Banks alone, *Endeavour* under James Cook was eventually to have a party of nine civilians, including Sydney Parkinson and two black servants, headed by Banks – as well as Banks's greyhound. Last to join the team was Banks's friend, Daniel Solander (1733–1782), one of Linnaeus's pupils and an Assistant Keeper at the British Museum. Solander was to work closely with Banks, collecting and describing; Parkinson was to draw natural history specimens. They took proof sheets of '*Notes upon the Twelve Books of Paradise Lost*' by Joseph Addison, to dry the specimens, and Fothergill thoughtfully provided Cook's ship *Endeavour* with apples that kept well for over a year.

By now, the expedition was ostensibly "for the Promotion of Natural Knowledge" in astronomy, geography and natural history, part funded by King George III and with the ship and crew provided by the Admiralty, all supplemented by Banks's own resources. But Cook's main instruction was "the Discovery of the Southern Continent so often Mentioned" by now long considered to the south of the seemingly arid New Holland (Australia). The total baggage and equipment of Banks's team weighed perhaps twenty tons.

Cook sailed *Endeavour* from Plymouth Sound on 25 August 1768 and reached the Society Islands, on 10 April 1769. With observations of the Transit completed in Tahiti, Cook set off southwards to seek the 'Southern Continent'. On 7 October Banks was collecting seaweeds on what they at first took to be that continent, namely New Zealand – but Cook's circumnavigation soon showed that it was just two islands. From October 1769 to March 1770 Banks's team collected some 350 species at eight different localities here: Poverty Bay, Anaura Bay and Tolaga Bay on the east coast, Mercury Bay and near Thames in Coromandel, the Bay of Islands, and Queen Charlotte Sound and Admiralty Bay in the Marlborough Sounds. Solander was to provide (with Banks) manuscript names and his own Latin descriptions of 343 New Zealand species.

In 1895 duplicates from the *Endeavour* collections, the first scientific ones made in the country, were repatriated to New Zealand, with some uncoloured pulls from the copper plates that Banks commissioned from the drawings; these engravings were intended to illustrate Thomas Kirk's *Student Flora* – there are some in this Museum including some on display tonight [4 April 2019] (Fig. 1); other specimens were sent back in the 1980s. Of these collections, 313 are represented in Te Papa as 541 herbarium sheets, while Auckland Museum has 545 sheets and there are 92 at Landcare Research, Lincoln.

Parkinson wrote of New Zealand, "the country about the bay is beautiful beyond description, and, with proper cultivation, might be rendered a kind of second Paradise. The hills are covered with beautiful flowering shrubs intermingled with a great number of tall and stately palms which fill the air with a most grateful fragrant perfume", possibly *Cordyline australis*. He also discussed in detail New Zealand flax or hemp, the tea-tree and other plants used by the Maori people including tikumu, *Celmisia* species, its leaves used in waterproof cloaks.

But this is not merely of antiquarian interest. Mark Large and others have compared the density of stomata, the breathing pores on the leaves, from Banks and Solander's collections in this museum with modern collections. They found that the old



Fig. 1. *Nestegis apetala* – an uncoloured pull from the copper plate that Banks commissioned from the Parkinson drawing. The plant was collected in the Bay of Islands, Nov–Dec 1769, by Banks and Solander and drawn by Parkinson during Cook's first voyage. Proof print, 1890s, Auckland War Memorial Museum, ex Natural History Museum, London, plate 507.

specimens had significantly higher densities of stomata, consistent with the idea that there is a relationship with atmospheric CO₂ concentrations – the denser the stomata, the lower the concentration, as has been seen in northern hemisphere trees for example.

With weather against him, Cook abandoned the planned eastward route back via Cape Horn, and, turning back, made for Van Diemen's Land, today's Tasmania. This change allowed Cook to investigate 'the East Coast of New Holland' of earlier maps. Specimens were kept as fresh as possible for drawing by keeping them in tin chests with wet cloths, but Parkinson was battling to keep up with the new collections brought on board such that, from then onwards, he was not able to complete any more watercolours.

Six days' botanising at Botany Bay, where Banks and Solander made specimens of 132 plant species, resulted in the first scientific collection of the Australian flora. Then on 11 June, calamitously, *Endeavour* struck the Great Barrier Reef. She was got off the coral on 17 June, though, as Banks, appearing undeterred, noted, 'in the meantime Dr Solander and myself began our Plant gathering'. *Endeavour* was moved into the river now bearing her name, beached – and repaired. But this disaster was to allow the time for seven weeks' exploration and collecting.

Parkinson drew 141 species but by 28 July Banks had had enough, "Botanizing with no kind of success. The Plants were now intirely compleated and nothing new to be found, so that sailing is all we wish for if the wind would but allow us".

Shortly afterwards the weather did indeed become favourable and, picking her way through the reef, *Endeavour* pushed north in completing Cook's survey of some 2000 miles of the Australian east coast, a coast to be claimed for Britain and named New Wales, later New South Wales, by Cook. By October the expedition had reached Java, where Parkinson drew 74 species, and, while *Endeavour* was being repaired, the company began to succumb to the diseases prevalent there. Among Banks's party, the two Tahitians he had brought from Polynesia died in Batavia and, by Christmas Day when the ship left Java, Banks himself, besides Solander and others of their party, contracted malaria. The voyage to the Cape and on to St Helena saw the deaths of 22 of the company including Parkinson – probably from a combination of the malaria and dysentery. Of the 94 in the company that had set out with Cook, only 41 were to return alive to England, and, of Banks's original nine, just four – Banks, Solander and their two field assistants.

Banks's journal of the voyage ran to some 200,000 words and his plant-collection some 30,000 specimens representing 3000 species of which perhaps 1400 were new to science. Of Parkinson's work there are 18 volumes of plant-drawings with 269 finished by him, 673 unfinished. He also made 268 of the 298 surviving animal drawings.

It was soon known that, as Banks had wanted, a second voyage to find the postulated southern continent was planned; the Admiralty ordered two ships to be bought for the expedition. Rivalry with France was now the more ostensible motive. This time the excited Banks planned a party of 16 with Solander and four artists including Zoffany no less – but disagreements between the Navy Board and Banks about refitting *Resolution* for this led to Banks and his party withdrawing.

Meanwhile, an unauthorised, anonymous account of Cook's first voyage appeared in September 1771. But worse was to come in that Parkinson's brother, Stanfield the upholsterer, wanted to publish an account based on his dead brother's manuscripts. Banks, as Parkinson's employer, had assumed that the rights to the drawings and manuscripts were his, but the dying Parkinson had expressed to Solander the wish that James Lee should have "perusal of his papers". Stanfield claimed that his brother had left them to his family and so Banks lent the drawings and other papers to Stanfield, who promptly had them copied and engaged a Dr Kenrick, to prepare them for publication. This compiler was apparently the highly colourful hackwriter, William Kenrick, described by the *Oxford Dictionary of National Biography* as having:

"a strong love of notoriety, a jealous and perverse temper, and was often drunk and violent. He became the enemy of every decent and successful person, and so notorious a libeller that few condescended to answer him. His vanity led him to fancy himself equal to any task without serious study.... In his later years Kenrick seldom wrote without a bottle of brandy at his elbow. Though a superlative scoundrel, he was clever, and especially proud of the rapidity of his writing; even his more serious works seldom occupied more than two days".

Banks had an injunction issued such that Stanfield's publication would have to be delayed until after the appearance of the official account to be brought out by John Hawkesworth. In effect Hawkesworth melded Banks's and Cook's manuscript accounts, but without any real reference to them, and also used Parkinson's journal – without any acknowledgment whatsoever. Hawkesworth's book appeared in an edition of 2000 on 9 June 1773 and, despite contemporary criticism, it was a best-seller, there being several issues known, though

Hawkesworth died less than six months after publication. Once this account had been published, the injunction to prevent Parkinson printing Sydney's was lifted. So, a month later, Sydney's *Journal of a voyage to the South Seas* appeared, but it had been pieced together with other sources by the reckless Kenrick, without any resort to checking or revision by authoritative editors. This torrid episode was brought to a conclusion by Banks's friend, John Fothergill, the Quaker philanthropist (therefore no doubt sympathetic to Sydney Parkinson). He wrote to Banks on 3 September 1773:

"The poor unhappy [Stanfield] Parkinson is now in a Mad house: his affairs involved, and all must be sold immediately. His executors....are in possession of 400 copys of his book, which must be disposed of....the creditors have offered these 400 copys bound and unbound at **10^s *** each and the copper plates at **100[£] *** – Shall we become purchasers? – and insert after his charge, a justification? and then let them be sold....Will not this be the easiest and most effectual method of doing our-selves justice? If we destroy the copys we are rendering the others more valuable...." and so that is what they did.

As early as November 1771, Banks was said to have put aside **£10,000 *** to publish the botanical results of the voyage in some 14 volumes. Work started in earnest after Banks's withdrawal from Cook's second voyage. By spring 1777, 213 unfinished Parkinson drawings had been prepared for the engravers, making a total of 483. Banks had listed 942 to be subjects but eventually settled on slightly more than 800 of which 753, 184 of them from New Zealand (Parkinson had sketched some 215 species), were finally engraved.

Meanwhile Linnaeus in Sweden was increasingly frustrated by the delays and his inability to see the Pacific collections, so sent his son to London. During the younger Linnaeus's stay in London, Dryander wrote to a friend in Uppsala, "Nobody will yet receive any of Sir Joseph's South Sea plants besides myself, and least of all Linnaeus [the younger]", and, later, "Professor Linnaeus will return to Sweden without having touched Mrss Banks's and Solander's South Sea plants; he has not even seen them. We have not worked on them since he arrived here and will not as long as he stays".

Solander's excellent Latin descriptions prepared during the voyage, with the new genera and species he named arranged according to the Linnaean system, survive in the Natural History Museum in London. They were transcribed ready for printing. His death in 1782 slowed the work but, with his successor to add the scientific diagnoses, there should have been no impediment to realising this enormous investment, already perhaps **£4500 ***, with up to **£7500 *** calculated to bring it out. In the

event some engravings were run off and distributed. A set even reached Linnaeus. But Solander's work could have been published without the illustrations and had they been so, the story of Pacific botany – and the names of many New Zealand plants – would have been very different.

But, during a slump following the American War of Independence (1775–1781), Banks's income from wool and his other agricultural interests was falling. Being President of the Royal Society, and becoming a married man, his interest – and, perhaps more importantly – his constrained resources are generally held to be the reasons for his not completing the project in which he had invested so much. Nonetheless, in November 1784 he could still write of the Parkinson project, "Because everything was produced by our common effort, Solander's name will appear on the title page next to mine....it can be completed in two months if only the engravers can come to put the finishing touches to it") and even in 1791 he was still planning on issuing the book, now in parts, laying the blame for the delay on his work at Kew, the next year other official duties as well. He was to support William Roxburgh's magnificent *Plants of the coast of Coromandel* (1795–1820), again engraved by Mackenzie, without reviving his own project, so was there something more profound he had by then realised? Had he by now an eye to something better? As Wilfrid Blunt has written:

"The fact remains that to place a [Ferdinand] Bauer beside a Parkinson is to be compelled immediately to admit that we are contrasting the work of a genius with that of a very competent and conscientious craftsman...as an artist [Parkinson] nor any of those who completed his unfinished task were....in the same class as Aubriet, Ehret, or either of the two [Ferdinand and Franz] Bauers".

Banks was to embrace the Austrian Bauer brothers, whose work was known to him from 1787 at the latest. Although Parkinson's work was infinitely superior to any earlier illustrations of Australasian plants, the Pacific work of Ferdinand Bauer a few years later was to reach the highest pinnacle of botanical art – and Banks, yet again, was to be behind that.

Only at the turn of the twentieth century, 130 years after they had been executed, the drawings of the specimens collected on Cook's first voyage were published. In 1890, William Carruthers, Keeper of Botany at the British Museum (Natural History) urged the Museum's Trustees to publish the engravings (as I have explained, some were run off for New Zealand around this time); but in 1899 lithography by the young Robert Morgan was settled on and the cost estimated at **£1273 15s 0d ***. James Britten issued

* For modern equivalents see Editors' Footnote on pg. 124

a selection of 319 plates in three parts (1900, 1901, 1905). Britten's total was 331 plants illustrated. Morgan had published his first botanical illustration when just 18 years old but was to die young as a result of complications following an operation for appendicitis.

Britten had intended to include New Zealand and possibly other plants but this project, too, was abandoned after allegedly £837* had been spent over five years. Sixty years later a selection of engraved plates was printed in London and in 1973 appeared the curiously-named *Captain Cook's Florilegium* in an edition of 100 comprising 30 plates, with a deluxe edition of ten with 12 more plates in 1976.

Only with the publication of Banks's *Florilegium* in the 1980s were all of Parkinson's engraved drawings published, albeit in a very exclusive way: loose plates in 100 sets in boxes without commentaries and costing over £100,000*. Only fifteen months ago were any of these drawings or engravings in colour made available to the general public.

By contrast with the first voyage, the botanical results of Cook's second voyage were published rapidly. That these less lavish publications appeared before the findings of the first voyage has meant that many of the plants of the south Pacific, notably New Zealand, were named from the collections made by the Forsters on *Resolution*. As Norfolk Island was the only part of the Australia region they touched on, European knowledge of the botany of New Zealand advanced in front of that of Australia as a result.

Later Solander's manuscripts were used and his unpublished plant-names printed by others, often from the Continent, as Banks now allowed access to

European scientists. It was largely in these ways that the Australasian treasures seeped into the scientific milieu, but this aspect of the influence of the collections of Cook's first voyage has hitherto been inadequately assessed – as there has been an overwhelmingly (understandable in the light of nationalist rivalries) Anglocentric focus.

Can it be that Banks, now deeply involved with matters in Iceland and many other diversions, and having seen Australia and New Zealand as a sideshow of the *Endeavour* voyage – successful in the Transit but unsuccessful in finding the southern continent for Britain, while Australasia had yielded nothing of commercial interest, felt there was now nothing to be lost by such magnanimity? Unlike the Dutch period, when secrecy seems to have been paramount, now the 'commercial in confidence' imperative seems not to have been pressing, so that it was perhaps sufficient then to allow the savants of Europe access to work on the collections.

Indeed, as the years passed, the scientific outcome of the Cook voyages, whatever Banks's thinking and apparent procrastination, was remarkably paradoxical when their initially nationalistic intent is remembered. Work on the collections by Continental scientists, meant that, except for the work of James Edward Smith on Australian First Fleet plants, the initiative had by now been largely lost by Britain – and this was only to be regained with the work of the Scottish botanist, Robert Brown, on the collections from Matthew Flinders's Pacific voyage at the beginning of the nineteenth century. Ironically, yet again, the success of that was to be the result of the intervention of no less than – Sir Joseph Banks. But that is another story!

* For modern equivalents see Editors' Footnote on pg. 124

Plants Of Western Springs Lakeside Park

Ben Goodwin & Mike Wilcox

Western Springs (28.2 ha), the Zoo, and the adjoining MOTAT (Museum of Transport and Technology) together cover a sizeable area in the suburbs of Point Chevalier/Grey Lynn, Auckland (Fig. 1). The Zoo opened in 1923, and was developed on bare wasteland, once the location of Auckland's first flour mill in the 1840s (see Wilcox et al. 2005; Goodwin 2016). A block of Monterey pine (*Pinus radiata*) was planted in 1923 on the slopes between the Zoo and what is now the Western Springs Stadium and is still there today and a prominent landmark (Wilcox 2012), but for safety reasons is destined to be felled in 2020.

In 1874 the springs were purchased for Auckland's water supply. Western Springs Lake is an artificial reservoir constructed by the Auckland City Council in 1875 to contain the water of an aquifer which discharged from beneath a lava flow and which, before this time, formed a small brook flowing into Motions Creek (Russell & Rodgers 1977; Hayward et al. 2011). The springs were an important source of eels for the Maori living on Mt Eden, and the original name for the springs was Waiorea (eel lake). The earliest botanical records are by Thomas Kirk in 1865.