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## Ideas made glass: Blaschka glass models at Canterbury Museum

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In 1882, Canterbury Museum purchased a series of intricate glass models of invertebrates made by Dresden artisan Leopold Blaschka (1822–1895) and his son Rudolf Blaschka (1857–1939). This article considers both the historic context and scientific theories that are likely to have shaped this purchase. With museums around the world seeking to assemble encyclopaedic collections, the Blaschka models were a way of ensuring that even difficult to preserve aspects of the natural world could be displayed and used for education. The Museum's founding director Julius von Haast (1822–1887) was particularly interested in communicating science to the Canterbury community. This article examines Haast's purchase by comparing and contrasting Canterbury Museum's Blaschka collection with two other collections (at University College Dublin and Otago Museum) as a way of exploring the possible influence of their scientific-educational context. This comparison provides evidence for the influence of several evolution-based theories as a preference bias for certain taxonomic categories amongst Canterbury Museum's collection of Blaschka models. In order to make the Museum's Blaschka models more accessible, this article concludes with a comprehensive illustrated catalogue of the collection.

**Keywords:** Blaschka, collecting, evolutionary biology, glass models, invertebrates, Julius von Haast.

### Introduction

In the latter half of the nineteenth century, intricate and expertly-crafted glass models made their way into university and museum collections around the world. Universities and museums were keen to collect, describe and to educate people about the natural world. But not all animals could be dried, skinned or satisfactorily preserved in alcohol. Dresden based father and son duo, Leopold and Rudolf Blaschka (1822–1895 and 1857–1939, respectively) produced thousands of glass models of invertebrate and botanical specimens. Inspired by technical drawings produced by leading biologists and live organisms, the Blaschka models were prized for their fine detail. Although now revered for their craftsmanship and artistry, the scientific context

behind the models deserves closer scrutiny (Brill and Huber 2016). Blaschka models were one of many foreign objects and specimens that were collected for Canterbury Museum by its founding director Julius von Haast (1822–1887). This article examines previous research on Blaschka models, describes the museological approach adopted by Haast and his connection to scientific circles, and assesses whether particular scientific viewpoints and approaches may be reflected in the composition of Haast's Blaschka order.

Museums of the 1880s were generally intended to present comprehensive collections depicting natural and human history. By viewing select examples of a wide range

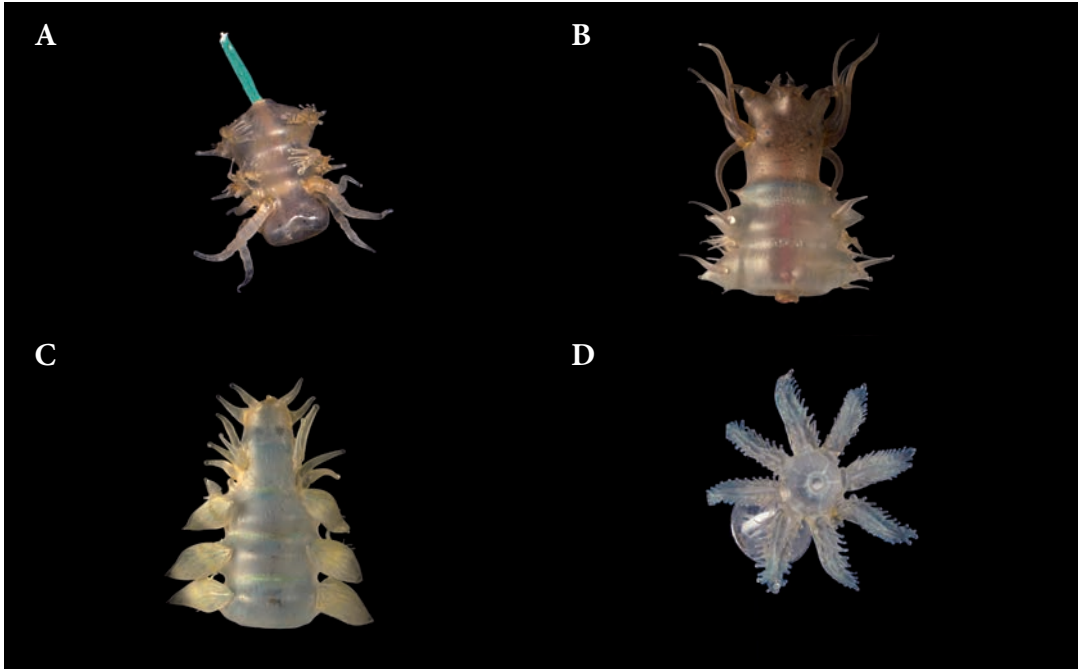
of subjects, visitors would be able to draw conclusions about both culture and nature (Fyfe 2010). High value was placed on encyclopaedic collections showcasing material from around the world (Haacke 1882). Haast followed this encyclopaedic model, collecting a range of local and overseas specimens, believing that foreign and rare material would increase Canterbury Museum's prestige and educational value. Based on the resulting attendance numbers it seems the Christchurch public agreed with his approach (Fyfe 2010).

Apart from the drive for comprehensive coverage, there was also at this time the dramatic rise of evolutionary theory (Darwin 1859; Haeckel 1874a) and of marine biology (Thomson 1878). Together these influences amounted to a new importance for soft-bodied marine invertebrates. However, these same animals also represented a glaring gap in traditional museum exhibits. Displaying these as specimens was rarely an option since satisfactory preservation of form and pigmentation presented many difficulties in the 1880s (and still does today) (Parker 1882; Lendenfeld 1885; Moore 1989). With an encyclopaedic vision in mind, Haast would have looked to fill this gap; and the Blaschkas' reputation among scientists would have appealed to Haast's educational goals.

By 1878, the Blaschkas produced 630 different models (Ward 1878) that would later grow to become a repertoire of over 700, including special commissions (Ward 1888; Brill and Huber 2016). Using a combination of frameworking, melting and bending glass with hand tools, the Blaschkas captured the detail and essence of their zoological subjects (Sigwart 2008; Brill 2016; Harvell 2016). Some of the more complex works delved into mixed media, blending real mollusc shells with glass bodies (see, for example, Canterbury Museum accession number (CMA) 1884.137.86) or simulating the dwelling tubes of annelids by coating these with sand (see CMA 1884.137.22). Working primarily at low temperatures, the Blaschkas manipulated glass into layers, sometimes thinner than an eggshell (Harvell 2016). Colours were added using a

mixture of techniques; sometimes the glass was painted, sometimes enamelled and other times coloured glass was used (Bertini et al 2016; Brill 2016). The Blaschkas' technical expertise is admired both for its scientific accuracy and its artistry (Harvell 2016; Brill 2016).

Canterbury Museum's purchase of a series of glass invertebrate models was inspired by a previous order of Blaschka models by Frederick Wollaston Hutton (1836–1905) who was Otago University Museum Curator until 1880. Although a date is not known for when this order was made, these models were displayed when that museum opened in 1877 (Hutton 1878a; Crane 2015a). Correspondence between Leopold Blaschka and Haast reveals that while the idea of purchasing models for Canterbury Museum was first mooted in 1879, an order was not placed until 1882 and the models did not arrive until October 1883 (Blaschka 1879, 1882; *Press*, 27 October, 1883: 3, 1 November, 1883: 3). Haast initially indicated that he wanted to duplicate Hutton's order but this did not eventuate. Leopold encouraged Haast to choose his own set; primarily as he did not recall the details of Hutton's order (Blaschka 1879; Crane 2015a). When Haast finally made his order in 1882, it was ultimately a larger one than Hutton had made for Otago Museum and its overall composition was significantly different (see Systematic Comparison). Unfortunately, the list of what Haast ordered no longer survives. In later correspondence, Leopold indicated that he substituted a few models and added some additional "worms and corals" free of charge (Blaschka 1883). These were to be released in the Blaschkas' next catalogue (Blaschka 1883). These free samples appear to be the enlarged heads of the marine annelids *Eunice norvegica*, *Nereis margaritacea* and *Phyllodoce paretii* (CMA 1884.137.90, 1884.137.20, 1884.137.18), and a soft coral polyp (CMA 1884.137.136) (Fig. 1). The relevant taxonomic nomenclature at the time of Haast's order is found in the Ward (1878) catalogue and reflected in Canterbury Museum catalogues. This is used here too as the most historically relevant and practical nomenclature



**Figure 1.** Free Blaschka model samples. **A**, *Eunice novegica* (CMA 1884.137.90). **B**, *Nereis margaritacea* (CMA 1884.137.20). **C**, *Phyllodoce paretii* (CMA 1884.137.18). **D**, a soft coral polyp (CMA 1884.137.136).

to use when comparing Blaschka collections.

Newspaper articles announcing the new acquisition note that the models were displayed in the Technological Room as examples of industrial art applied to science (*Star*, 16 February, 1882: 4). The articles clarified that in future the models would be catalogued taxonomically amongst relevant specimens (*Press*, 27 October, 1883: 3, 1 November, 1883: 3) and, as early as 1885, echinoderms and cuttlefish in spirits of wine were displayed with Blaschka models (Mosley 1885). By the time the first edition of the *Guide to the Collection in the Canterbury Museum* was printed in 1895, the Technological Room had been dismantled and the Blaschka models had been integrated taxonomically among the zoological displays (Hutton 1895).

Most of the literature regarding Blaschka models focuses on how the items were acquired, how they were displayed in the nineteenth century (Hackethal 2008; Swinney 2008; Callaghan et al 2014; Rossi-Wilcox 2015; Doyle et al 2016) and the artistic or scientific merit

of the models (Reiling 1998, 2014; Hackethal 2008; Rossi-Wilcox 2008). While the models are generally interpreted as educational aids (Dyer 2008; Sigwart 2008; Swinney 2008; Hackethal 2008; Reiling 2014), what particular aspects of zoology they were being used to teach has been largely neglected. Various authors have intimated that theories from this period did influence Blaschka acquisitions (Reiling 1998; Swinney 2008; Brill and Huber 2016), but exploration of this topic is sparse.

More specifically, Reiling (2014) relates the production of one subset of Blaschka models to the direct influence of Ernst Haeckel (1834–1919) and two of his theories (biogenetic law and colonial theory). Overall, however, exploration of what Blaschka models were being used to teach, the underlying scientific motivations and how these factors may have influenced purchasing decisions of the Blaschkas' clientele, is largely absent from the literature. This is surprising because the theories being considered in this period engendered intense interest and debates. Further, some of the biologists devising

prominent new theories (Haeckel 1874b; Lankester 1880; Dohrn 1875 in Dohrn and Ghiselin 1994) were highly aware of Blaschka models. Sometimes they were ordering Blaschka models themselves (Lankester 1877) or as in the case of German biologists Ernst Haeckel and Anton Dohrn (1840–1909), they were assisting the Blaschkas directly with information, books or specimens (Harvell 2016).

There would be a variety of factors in determining the composition of many Blaschka orders. For some larger institutions, with several curators and more specialised responsibilities and interests, some Blaschka orders might simply match the particular taxonomic interest of whatever segment of the collection was being addressed (e.g. Ridley's intended order of sponges for the Natural History Museum; Miller and Lowe 2008). In such cases an answer would be already apparent. But for other cases, the answer for why certain Blaschka models were ordered could include: to fill gaps in an otherwise comprehensive natural history display, to provide aesthetic pleasure, to minimise total cost, and/or to address scientific-educational themes.

Most Blaschka orders consisted of a broad spread of taxonomic groups. However, this does not necessarily mean that the general drive for comprehensive coverage was the only relevant motivation. An interplay of factors for most Blaschka collections can be expected. What interests us is the possibility that the signal from a single factor might still be present. Of the several possible factors, scientific-educational interest is the most amenable to analysis and discovery. Thus where curatorial interests are known, preference statistics can be used to test for a skew in a predicted direction. Even with an interplay of factors, if a collection was assembled with a particular scientific or educational bent, this is expected to be detectable as a skew towards those particular taxonomic groups and/or themes. Suitable collections to evaluate would be ones where the influence of a single curator with known scientific outlook and educational aims was dominant. The major Blaschka

collections in New Zealand, at Canterbury and Otago Museums, provide useful groups for such analysis given the distinctive (and contrasting) scientific-educational contexts they were ordered within. Another collection suitable for analysis is University College Dublin, which was acquired in a single order and initiated by a professor whose scientific and teaching concerns are well-documented (Parker 1885; Haddon 1887; Callaghan et al 2014).

The factor of cost has sometimes been identified as a strong consideration in Blaschka orders. However, we think this is a largely moot point, as while cost is expected to influence the choice of models within a taxonomic group, it is not usually expected to determine which groups were ordered (at least when a broad range of Blaschka models are being ordered). Further, it is worth noting that most taxonomic groups contained both cheap and expensive examples and that the expensive models are distributed between various themes. Thus the most expensive models include ones that would be primarily useful for display and/or identification (e.g. certain anemones, echinoderms, cephalopods) while other expensive models were a focal point of academic and textbook interest (e.g. embryology models of tiny plankton unfamiliar to most observers). In this context it is worth pointing out that investments in expensive embryological models provide examples where the intent is clearly scientific and educational.

Although 133 extant glass invertebrate models have been in the collection of Canterbury Museum since the 1880s (counted according to the Ward 1878 catalogue), the items have received little attention. This paper is the result of a recent cataloguing project and explores the scientific context that is likely to have influenced Haast as Director of Canterbury Museum. In particular, this article considers the educational aims, their theoretical underpinnings and Haast's diverse relationships with local, visiting and foreign scientists. Here, Canterbury Museum's model collection is systematically compared with those of Otago Museum and University College Dublin to identify any significant model preferences.

The article concludes with a comprehensive illustrated catalogue of Canterbury Museum's models.

### The scientific context

The latter half of the nineteenth century saw traditional natural history or “inventory science” (Crane 2014) contested by the rise of new theory-driven approaches (Farber 2000).

Several zoological subjects came to new prominence in the 1870s with advances in evolutionary theory and concomitant changes in zoological teaching. Earlier field guides, while broad in taxonomic scope, concentrated mainly on what could be readily observed (e.g. Gosse 1865) and emphasised identification and classification. This emphasis, along with a great gathering of other zoological evidence, was also seen in textbooks such as Nicholson (1873) as favoured by Hutton (*Clutha Leader*, 15 August, 1879: 6). However, the newer textbooks, informed by what we are here generally designating as more modern evolutionary thinking (Gegenbauer 1878; Huxley 1878; Parker 1891), taught that whole animal orders could most profitably be understood by concentrating on ‘types’: exemplary invertebrates that revealed basic groundplans (Crane 2015b). These animals tended to be small and have a relatively humble appearance such as plankton, hydrozoans and the simplest of annelid worms. Such textbooks featured fine details of their anatomy and most particularly their development or embryology. The new zoological teaching reflected an extraordinarily rich time for new evolutionary theories in the decade after 1875, that had arisen from the implications of *The Origin of Species* (Darwin 1859) being expanded by the first generation of post-*Origin* biologists (Asma 2001; Reiling 2014).

This new thinking entered precipitously and directly to New Zealand in 1880–1881 and provides a highly distinctive scientific context, and a reason to believe Haast developed a truly contemporary evolutionary outlook by the time he placed his Blaschka order. Between Haast's

initial contact with the Blaschkas in 1879 and his order being placed in 1882, three evolutionary biologists started work in the South Island. This was significant because New Zealand had few formally-trained academic biologists at this time (Haacke 1881; Crane 2015c). All the new arrivals had strong interests in not just promoting evolutionary theory but advancing it. The first, Englishman Thomas Jeffery Parker (1850–1897), was a self-proclaimed disciple of the famous comparative anatomist and evolutionist Thomas Huxley (1825–1895) and arrived in the South Island in 1880. Parker worked as Professor in Biology at Otago University and replaced Hutton as Curator at Otago University Museum in 1880 (Crane 2015c). Parker was a notable proponent of some of Haeckel's theories, including biogenetic law (Crane 2015c), which hypothesised that during development from embryo to adult, animals go through stages that resemble successive stages in the evolution of their remote ancestors. Parker also used evolutionary branching tree diagrams (phylogenies) to illustrate the results of evolution (Parker 1885).

Two other biologists worked closely with Haast at Canterbury Museum. Dr Johann Wilhelm Haacke (1855–1912), a recent graduate from the University of Jena in Germany (and student of Haeckel) arrived in Dunedin in 1881. Although Parker was unable to provide employment for Haacke, he recommended him to Haast who hired him for a cataloguing project (Haacke 1881; Parker 1881; Haast 1882). Haacke's role involved creating “ticket catalogues” for hydrozoans, echinoderms, and other animal groups for seven months (Haacke 1881; Parker 1881; Haast 1882, 1948). Haacke was profoundly concerned with theory as his later writing makes clear (Haacke 1893; Levit and Olsson 2006) and his correspondence with Haeckel suggests he was developing his theories while in New Zealand (Haacke 1881). Austrian biologist, Dr Robert von Lendenfeld (1858–1913), also arrived in New Zealand in 1881 with a letter of introduction from Thomas Huxley (Lendenfeld 1883a). Lendenfeld had studied at the University



of Graz, Austria (Lendenfeld 1883b, Hösch 1972), and eventually took a part-time teaching position at the Agricultural College in Lincoln, Canterbury, in 1883. According to *New Zealand Journal of Science* (Anonymous 1882a), he also studied under Ernst Haeckel. Haast provided Lendenfeld space at Canterbury Museum where he set up his own part-time research laboratory with his wife as his assistant (Anonymous 1883c; Lendenfeld 1883b; Haast 1883). Many of his results were from studies of aquaria reared animals (e.g. hydrozoan development), so his work at Canterbury Museum may have had this experimental aspect too.

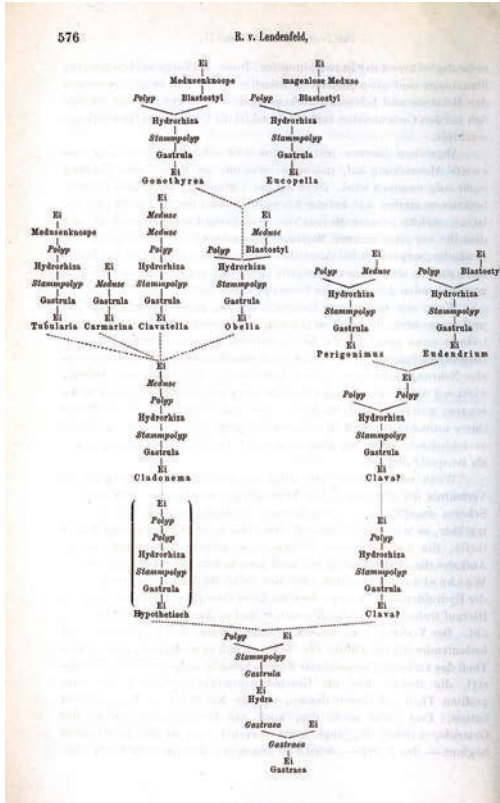
These three connections highlight the strong links Haast had with the scientific community generally. Haast also corresponded with scientists abroad, including Darwin, Joseph Hooker and Haeckel, and kept abreast of local scientific debates (Haast 1883; Stenhouse 1984). Although not zoologically trained (Haacke 1881; Nolden 2016), Haast's correspondence with Lendenfeld and Parker strongly suggests he was cognisant of fine zoological details himself, including coelenterate embryology and crayfish anatomy (Parker 1881). According to Haacke (1881), Parker, Haacke and Haast probably held the only three copies of Haeckel's (1866) *Generelle Morphologie* in New Zealand. Overall, the three newly-arrived biologists were largely aligned with the teaching approach and theories expounded by the likes of Haeckel and Huxley (Crane 2013).

A modern evolutionary view of nature at this time would include an emphasis on annulated worms, particularly annelids, which became prominent during this period. In the early 1880s, the Gehyrea (spoonworms, peanut worms, priapulids) were thought to be related to annelids (earthworms, bristleworms, leeches) as both showed external rings or annulations (Gegenbauer 1878). The new importance of worms in evolutionary teaching as exemplars of segmented animals is epitomised by Haast's contemporary, Parker, who devoted two lengthy lessons in his earliest published textbook (Parker 1891) to a simple marine annelid worm

(*Polygordius*) to teach the basic body plan for all the "higher" animals. For Parker's New Zealand zoology students, this seminal lesson was delivered theoretically via textbook only, because *Polygordius* was a native of the Bay of Naples! This example highlights Parker's emphasis on the teaching value of distinct morphological types in line with Huxley's approach.

The Blaschkas would have been aware of the increasing profile of annelids in zoological teaching and judging by drawings held by the Corning Museum of Glass, Corning, New York, they planned a developmental series for *Polygordius*. Although this did not happen, they did later produce one of their most expensive models, a developmental series for another marine annelid *Autolytus* (Agassiz 1862; Ward 1888). The Blaschkas' awareness of annelids is hardly surprising given that Anton Dohrn sent live invertebrates from Naples to the Blaschkas in Dresden (Harvell 2016). Dohrn (1875 in Dohrn and Ghiselin 1994) was one of two researchers who had newly interpreted the segmented body plan of annelids as evidence that they were the closest relatives to the backboned animals. Although the relationships between annelids and other groups remained controversial, it is nonetheless clear that contemporary zoological teaching in the 1880s included a new emphasis on annelids. This adds another hypothesis that can be tested with respect to Blaschka models; institutes imbued with contemporary zoological thinking could be expected to order relatively more annulated worm models. For Canterbury Museum it seems relevant that Haast ordered Blaschka models of both the adult (CMA 1884.137.22) and the developmental series of the marine annelid worm *Terebella conchilega* (CMA 1884.137.110).

Our brief discussion of the scientific and educational context of this period requires mention of the heightened interest in the study of animal embryos. The dawning recognition of the importance of developmental stages at this time is well illustrated by Perrier's reflections (1880), and also by Bateson's reminiscences on his zoological youth in 1883 when "every aspiring



**Figure 2.** Copy of diagram showing combined phylogeny and development. Three of the hydroid genera on this diagram were ordered for Canterbury Museum as Blaschka developmental models. Lendenfeld (1883a).

zoologist was an embryologist, and the one topic of professional conversation was evolution” (1922: 56). Prominent among the relevant theories here is Haeckel’s version of biogenetic law (Gould 1977; Hall 2003), which was his most famous (and ultimately controversial), and of which Haast would have been aware. These new evolutionary theories increased interest in embryology and hence demand for Blaschka ‘stages of development’ models (Sigwart 2008; Reiling 2014). The general interest in embryology should not be solely equated with biogenetic law, however. Another embryology-based evolutionary theory that is worth considering as an influence on Blaschka model production and demand is *Gastraeatheorie* [Gastraea Theory] (Haeckel 1874b, 1877). *Gastraeatheorie*

postulated a general uniformity of structure in the early developmental stages of animals in widely separated groups. While this theory was controversial (Agassiz 1876), it did have impact (Huxley 1875) and was a driver for further investigations (Robinson 2016), including those of the phylogenetic relations between simple coelenterates (e.g. Lendenfeld 1883c) and also between coelenterates, protozoa and sponges.

A vestige of interest in *Gastraeatheorie* may be present in Canterbury Museum’s Blaschka collection. Lendenfeld’s principal research centred on coelenterates and sponges. Lendenfeld’s (1883c) detailed study of South Sea hydroids (small, moss-like animals that grow on kelp, mussels and other substrates) features a tree diagram showing their phylogeny combined with development (Fig. 2) and the tree is rooted with the hypothetical *Gastraea* animal as ancestor. This research had been produced and publicised by 1882 (Anonymous 1882a). Lendenfeld’s research shows an intriguing correlation with Haast’s Blaschka order. Three of the genera represented in his phylogenetic-developmental diagram (*Carmarina*, *Tubularia*, and *Obelia*) (Lendenfeld 1883c) are also represented in Haast’s order as developmental series (CMA 1884.137.41-42, CMA 1884.137.63, CMA 1884.137.108, CMA 1884.137.109, CMA 1884.137.126).

**A systematic comparison of the composition of three Blaschka collections**

If Haast left a discernible scientific-educational mark on Canterbury Museum’s Blaschka collection, it is anticipated that Canterbury Museum’s Blaschka collection would be skewed towards more developmental models, non-anemone coelenterates and annulated worms. These categories are the ones expected to reveal contemporary evolutionary theory and teaching based on Haast’s selections, and have a chance of contrasting against a background of other possible influences. In order to investigate this possibility, three Blaschka collections were



assessed for possible differences in model preferences and potential selection bias: Canterbury Museum (CM; Christchurch, New Zealand), Otago Museum (OM; Dunedin, New Zealand), and University College Dublin (UCD; Dublin, Republic of Ireland). OM was included in the study as Haast initially aimed to copy Hutton's order there and Hutton published his views on teaching (1880a). University College Dublin was included because the details of their purchase has been carefully researched (Callaghan et al 2014), and it was acquired in a single order initiated by Professor Alfred Cort Haddon (1855–1940) whose scientific and teaching concerns are well-documented. Haddon was a friend of both Parker and Huxley, who had similar interests in phylogeny (Parker 1885), and embryology (Haddon 1887) and was directly involved in modern evolutionary teaching. The Natural History Museum (London) collection was not included in the analysis as that collection was acquired in four separate acquisitions (Miller and Lowe 2008; Bertini et al 2016). The collection at the Museum of Comparative Zoology at Harvard University was not included as the current model holdings there are representative from a once broader set of models (Linda Ford pers. comm. 2 March 2016) and research might be required to gauge how well the existing collection reflects its original composition.

Primarily because the aim of the analysis was to make inferences about underlying curatorial

interests, but also to make groups of models sufficiently large enough for meaningful testing to occur, some catalogue-based groups were split or combined to create groups that could be expected to reveal particular zoological themes from the 1880s. Thus, coelenterates were divided into two groups as true sea anemones and non-anemones. Sea anemones were a favoured group for natural historians (Gosse 1860) whereas non-anemone coelenterates were the object of vigorous study by leading academic evolutionary biologists including Huxley and particularly Haeckel. Interest in annelid worms is expected to overlap with that for other annulated worms so these groups are combined as one zoological theme. Molluscs, echinoderms and flatworms (MEF), which were subjects of mostly traditional natural history interest at this time, were combined and treated as one zoological theme for the purpose of our analysis.

Overall, there were 133 models in the CM collection, 139 in the UCD collection and 57 at OM (Table 1). Each museum contained a number of models that were not found in the other two collections, and only 11 models were purchased for all three collections (Fig. 3). Fifty four models occurred in both the CM and UCD collections. Hierarchical clustering analyses (Bray-Curtis Distance Measure and Group Averaging clustering method) based on the numbers or proportion of models in each taxonomic category suggested that the

**Table 1.** Number and proportion of models of each taxonomic category in the collections held in each museum (UCD - University College Dublin; CM - Canterbury Museum; OM - Otago Museum). Adjusted residuals were calculated based on the expected values obtained from a 3 x 5 contingency table, using formula provided by Sharpe (2015).

	Number of Models			Proportion of collection (%)			Adjusted residuals		
	UCD	CM	OM	UCD	CM	OM	UCD	CM	OM
Mollusca/Echinodermata/Flatworms	59	56	24	42.4	42.1	42.1	0.06	-0.04	-0.02
Anemones	7	18	10	5.0	13.5	17.5	-2.82	1.40	1.86
Chordata	6	10	6	4.3	7.5	10.5	-1.47	0.50	1.28
Coelenterates (other)	54	37	13	38.8	27.8	22.8	2.42	-1.22	-1.57
Worms (annulated)	13	12	4	9.4	9.0	7.0	0.29	0.11	-0.53
Total	139	133	57	100	100	100			

Table 2. Actual number (N) of models of each taxonomic category in the collections held in each museum, and expected number (Exp.) based on the proportion of models of each taxonomic category in the appropriate catalogue. Residuals (Res.) are standardised residuals calculated using the formula provided by Sharpe (2015). P values are derived from the calculated  $\chi^2$  value for 4 degrees of freedom.

	UCD			CM			OM		
	N	Exp.	Res.	N	Exp.	Res.	N	Exp.	Res.
Mollusca/Echinodermata/Flatworms	59	73.0	-1.64	56	67.7	-1.42	24	29.0	-0.93
Anemones	7	20.6	-2.99	18	20.4	-0.53	10	8.7	0.43
Chordata	6	7.0	-0.38	10	6.9	1.16	6	3.0	1.76
Coelenterates (other)	54	32.5	3.78	37	32.2	0.86	13	13.8	-0.21
Worms (annulated)	13	5.9	2.90	12	5.9	2.52	4	2.5	0.93
$\chi^2$		34.5			10.7			5.04	
P		<0.001			0.030			0.283	

compositions of the model collections at CM and UCD were more similar to each other than to the collection at OM (Fig. 3).

An initial examination of the proportions of models in the different taxonomic categories in the three collections involved a chi-square ( $\chi^2$ ) test of association using the counts of models in each group (Table 2). Deviations from the number of models expected by chance (if all the collections contained the same model composition) were assessed by adjusted residuals using the formula provided by Sharpe (2015):

where, O = observed counts; E = expected counts:

$$Adj\ Residual = \frac{(O - E)}{\sqrt{E(1 - Row\ Total / n)(1 - Column\ Total / n)}}$$

n = total number of models

There was moderate evidence that the proportions of models in the five taxonomic categories differed among the three museums ( $\chi^2 = 14.8$ ,  $P = 0.062$ ,  $df = 8$ ). The proportion of MEF models in each collection was very similar over the three museums, ranging from 42.1% to 42.4% (Table 2). Similarly, the proportions of models represented by annulated worms were also fairly consistent, ranging from 7% at OM to 9.4% at UCD. The major discrepancies, as revealed by adjusted residuals  $> |2|$ , were observed in the proportions of models in the anemones and coelenterates (Table 1). Non-anemone coelenterates were under-

represented at OM (22.8%) compared to UCD (38.8%), whereas the anemones were under-represented at UCD (5.0%) compared to OM (17.5%). The models represented by Chordata were much lower at UCD (4.3%) compared to OM (10.5%). This analysis suggests that the collections at UCD and OM were distinct, and the model collection at CM was somewhat intermediate between that of the other two museums. However, the adjusted residuals indicated that models of anemones might be under-represented and those of other

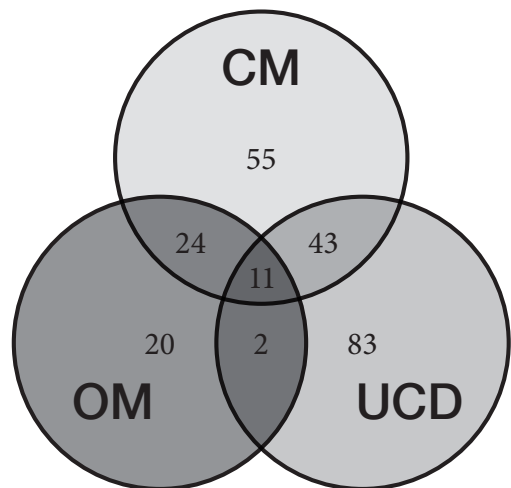
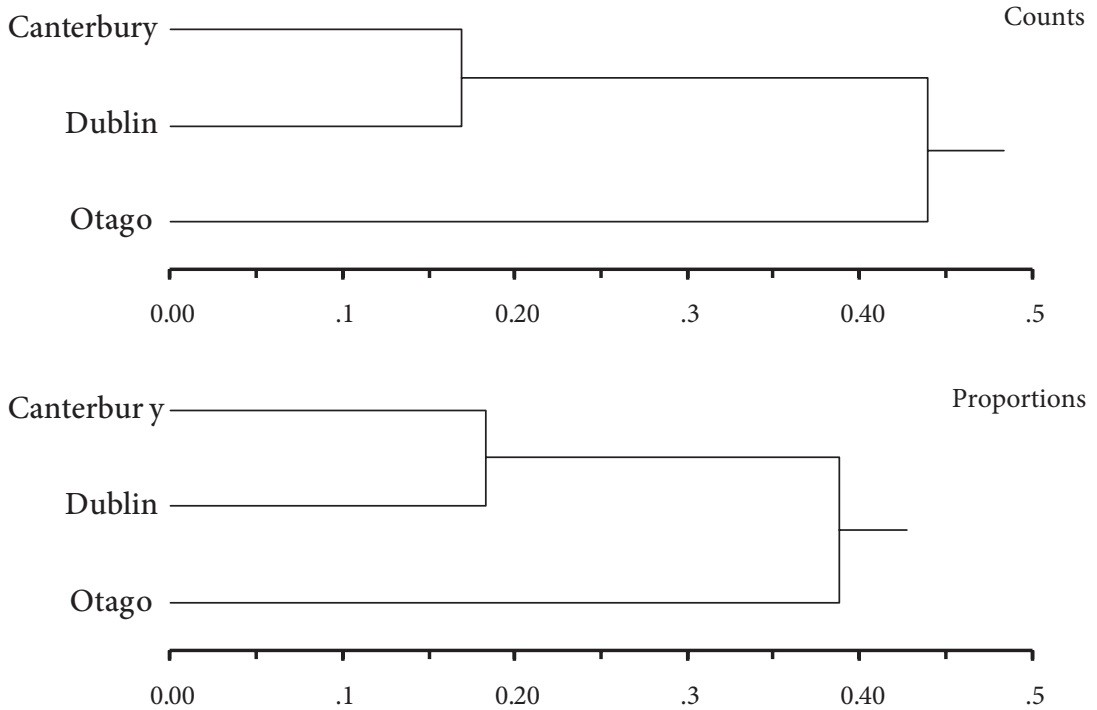


Figure 3. Venn diagram illustrating the numbers of models the collection at each museum contains and what proportions of models were unique to each museum or shared between collections (CM - Canterbury Museum; OM - Otago Museum; UCD - University College Dublin).



**Figure 3.** Dendrograms based on hierarchical clustering indicating the similarity of the compositions of the model collections at three institutes. Clustering was based on either the actual counts of models or the proportions of models in each taxonomic category in each collection.

coelenterates over-represented in the collection at CM, although not to the extent of that in the UCD collection (Table 1).

Selection bias of models was assessed using a chi-square goodness of fit test. The observed numbers of models in each taxonomic category in each collection were compared to the numbers expected to occur if selection had occurred from the appropriate catalogue at random (Table 2). Biases were determined using standardised (or Pearson) residuals, as calculated using the formula provided by Sharpe (2015):

$$\text{Std Residual} = \frac{(O - E)}{\sqrt{E}}$$

This analysis suggested that model selection had occurred non-randomly at UCD and CM ( $P < 0.05$  in both cases), but that there was little evidence of a strategy for model selection

at OM ( $P = 0.283$ ) (Table 2). The residuals indicated that the CM collection was under-represented by MEF and over-represented by models of annulated worms (Table 2). The bias away from purely natural history models was even stronger at UCD, where the residuals suggested a strong deviation away from MEF and anemone models and towards models of coelenterates and annulated worms.

### Summary of systematic comparison

The goodness of fit (Table 2) and clustering analyses (Fig. 3) indicate that the CM and UCD collections could reflect similar model selection biases. Despite many different models being ordered (Fig. 2), when the preferences for whole groups are considered, there appeared a collection composition matching ‘modern’ zoological teaching reflecting an interest in

the phylogenetic questions of the time. Both UCD and CM collections feature a small but significant bias for annulated worms and a relative disinterest in anemones. Tellingly, both UCD and CM collections feature many embryological models while OM have none.

In comparison with the results from CM and UCD, which showed a skew towards models suitable for zoological teaching, the OM collection appears to reflect a relatively ad hoc assortment of models available in the catalogue. The form of the collection at OM appears to reflect Hutton's predispositions. Based on the comparison with two other Blaschka collections, the OM collection reflects Hutton's deep and practical engagement with inventory catalogue natural history, as revealed by his extensive cataloguing of New Zealand fauna (Hutton 1878b, 1880b). While Hutton was a famously ardent Darwinist (Stenhouse 1984), who included basic coelenterate development in his public lectures (*Clutha Leader*, 15 August, 1879: 6), his order for Otago does not imply a strong connection with contemporary European theories. Rather it matches Hutton's convictions on the subject of zoological teaching. His laboratory manual (Hutton 1880a) is explicitly designed to be practical and features larger animals that are easier to observe and dissect. There is a strong emphasis on the student developing observation and practical skills in identification. In stark contrast to Thomas Parker's textbook (1891), Hutton chooses earthworms over marine annelids, large anemones over tiny hydrozoans, and devotes four whole lessons to mollusc dissection. Similarly his practical stance contrasts with the theoretical leanings of Lendenfeld and Haacke. Although biographies of Hutton sometimes refer to his adoption of Huxleyan methods, this is only partly true. His forthright views included dissatisfaction with the increasing use of some post-Darwin theories in zoological education (Hutton 1880a; Stenhouse 1990). The composition of New Zealand Blaschka orders might then be seen as a small window into debates ably reviewed by

Stenhouse (1990) that were being acted out in New Zealand at this time, in which Haeckel's influence played no small part (Anonymous 1882b). Hutton's views on teaching are crystal-clear from several comments in his preface (Hutton 1880a) and summarised in his opening quote: "The progress of science corresponds to the time of practical teaching; the stationary, or retrograde period of science, is the period when philosophy was the instrument of education". (Whewell in Hutton 1880a)

### **Conclusion**

The reasons for selecting specific Blaschka models are rarely known. In the absence of declared motivations for assembling Blaschka collections, there has been a default tendency to see Blaschka models as essentially filling gaps in an inventory of nature left by many difficult-to-preserve marine invertebrates. While the drive to achieve comprehensive coverage is certainly a feature of late Victorian natural history collections, this period was also one of intense intellectual exploration and new approaches to zoological teaching allied to new theories. Analysis of the composition of the Blaschka collection at Canterbury Museum, relative to the Otago Museum collection, finds a small but significant preference towards models that we deem more suitable for 'modern' evolutionary teaching. Moreover, looking at overall composition, of the three collections compared, Canterbury Museum's collection is most like that of the University College Dublin, a collection subject to comparable influences. The overall composition is similar despite less than half of the same models being represented. Based on this, it appears that Haast, like many of his scientific colleagues, was looking beyond inventory science. Haast maintained links with many key scientists, including two German-speaking coelenterate specialists with strong connections to Ernst Haeckel. It is likely that Haast was sympathetic to the new theories that promised to provide new foundations for biology and reform zoological teaching.

This fresh perspective on why various models were ordered might allow us to see these models in a similar fashion to their nineteenth century audience. Haast intended the collection at Canterbury Museum to be a cathedral of science and an encyclopaedia of the world. Haast's approach fitted his drive to stimulate local science. It also anticipated the large and impressive zoological teaching laboratory that later emerged at Canterbury College, which boasted many embryological models (*Press*, 13 March, 1896: 3). We hope that audiences of Blaschka models may gain a sense of the potent ideas that seem to have circulated around and through them and, for the first time in many decades, see these models made accessible once more.

### Acknowledgements

We are grateful to Moira White and Otago Museum staff who generously shared data. Dr Linda Ford and Johnathan Woodward, Museum of Comparative Zoology, Harvard University, assisted identifications by comparing their collection with photos. Thanks to Lynette Hartley for photographing the Blaschka models and to Frances Husband for cataloguing them. We thank the Ernst Haeckel archive and the Alexander Turnbull Library for allowing copies to be made of valuable correspondence.

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### Illustrated catalogue of the Blaschka collection at Canterbury Museum

Blaschka models are fragile and, over the 135 years of their care at the Museum, some of the models have suffered damage through the natural decay of adhesives, the nature of materials used and the fact the models were acquired for the purpose of teaching and display. Some models are currently awaiting conservation following the Canterbury earthquake of 22 February 2011. So that a comprehensive picture of the collection is provided, larger detached pieces of models are included in the photographs in this catalogue. Smaller pieces are not included. Each model is labeled with the original Blaschka number (from Ward 1878, 1888), a taxonomic identification and Canterbury Museum accession number.



Blaschka Number 1. *Alcyonium digitatum* 1884.137.57



Blaschka Number 5. *Corallium rubrum* 1884.137.21



Blaschka Number 6. *Gorgonia verrucosa* 1884.137.81



Blaschka Number 10. *Pennatula rubra* 1884.137.121



Blaschka Number 12. *Renilla violacea* 1884.137.118



Blaschka Number 14. *Sympodium caeruleum* 1884.137.71



Blaschka Number 16. *Tubipora hemiprichii* 1884.137.31



Blaschka Number 20. *Actineria hemprichii* 1884.137.115



Blaschka Number 36. *Anthea cereus* var. *maxima* 1884.137.56





**Blaschka Number 22.** *Actinia mesembrianthemum* 1884.137.5



Blaschka Number 27. *Actinoloba dianthus* 1884.137.29



Blaschka Number 41. *Bolocera eques* 1884.137.74



Blaschka Number 48. *Bunodes gemmacea* 1884.137.123





Blaschka Number 54. *Cerianthus membranaceus* 1884.137.64



Blaschka Number 55. *Corynactis clavigera* 1884.137.34



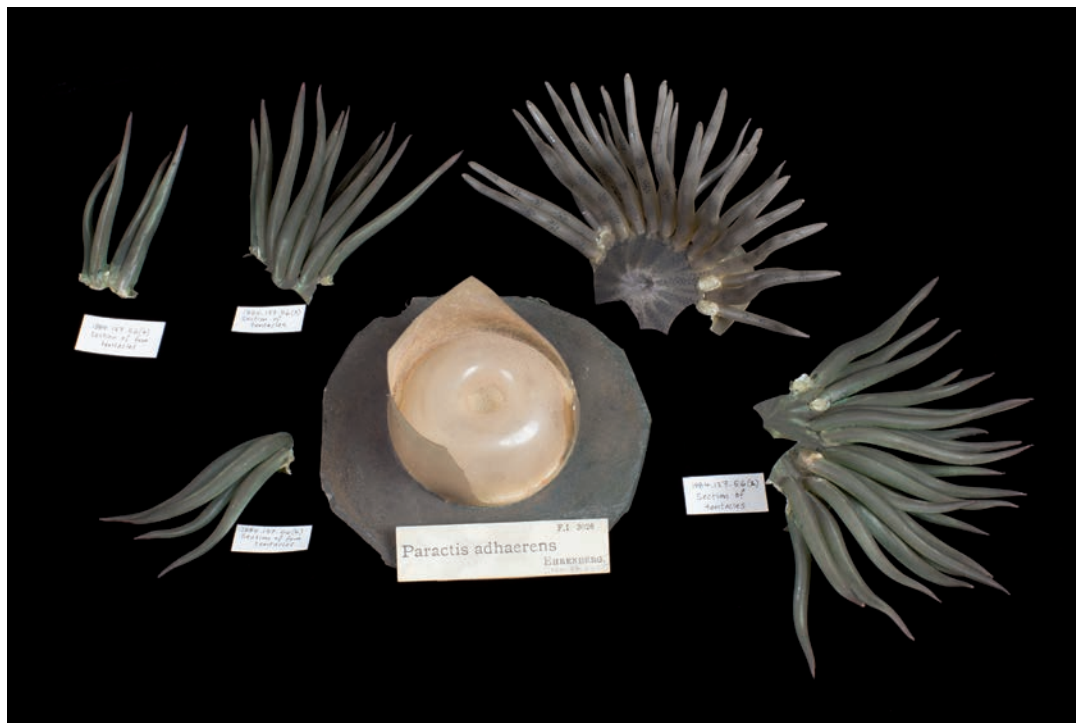
Blaschka Number 63. *Halcampa chrysanthellum* 1884.137.96



Blaschka Number 67. *Ilanthos scoticus* 1884.137.26



Blaschka Number 68. *Nemactis primula* 1884.137.124



Blaschka Number 70. *Paractis adhaerens* 1884.137.55



Blaschka Number 73. *Peachia hastata* 1884.137.28



Blaschka Number 83. *Phymactis pustulata* 1884.137.65





Blaschka Number 85. *Phymanthus loligo* 1884.137.30



Blaschka Number 88. *Sagartia bellis* var. *tyriensis* 1884.137.122



Blaschka Number 109. *Tealia crassicornis* var. *purpurea* 1884.137.27



Blaschka Number 115. *Thalassianthus aster* 1884.137.62



Blaschka Number 117. *Zoanthus couchii* 1884.137.70



Blaschka Number 119. *Astroides calycularis* 1884.137.73



Blaschka Number 138. *Carmanina hastata*, female 1884.137.41





Blaschka Number 139. *Carmarina hastata*, male 1884.137.42



Blaschka Number 140. *Carmarina hastata*, stages of development 1884.137.108



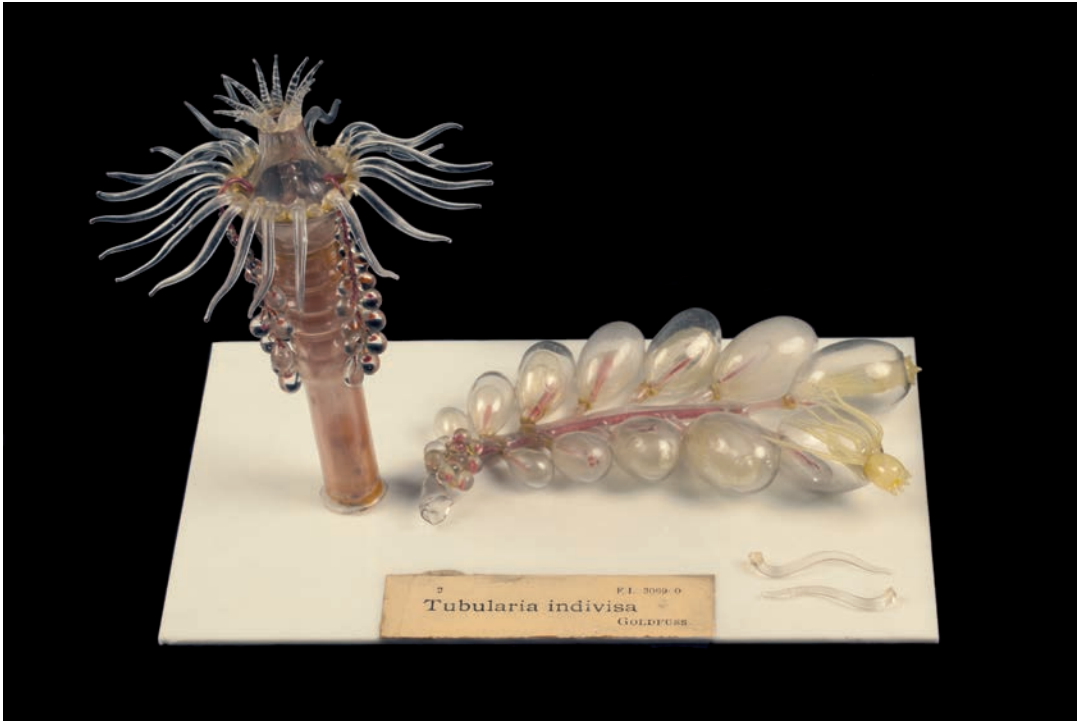
Blaschka Number 157. *Lafoea calcarata* 1884.137.107



Blaschka Number 167. *Obelia dichotoma*, male polyps and medusa 1884.137.109



Blaschka Number 169. *Oceania phosphorica* 1884.137.113



Blaschka Number 191. *Tubularia indivisa*, stages of development 1884.137.63



Blaschka Number 191a. *Tubularia indivisa*, male 1884.137.126



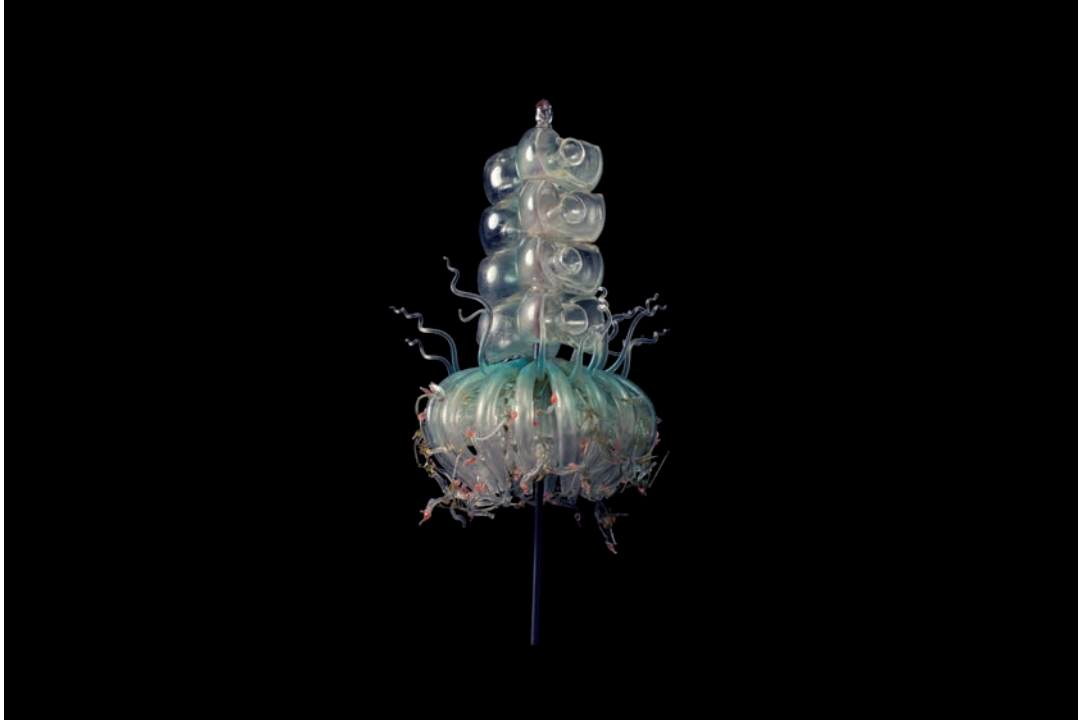
Blaschka Number 196. *Zygodactyla crassa* 1884.137.44



Blaschka Number 203. *Diphyes sieboldii* 1884.137.114



**Blaschka Number 211.** *Physalia pelagica* 1884.137.33



Blaschka Number 213. *Physophora magnifica* 1884.137.61



Blaschka Number 214. *Physophora magnifica*, stages of development 1884.137.40





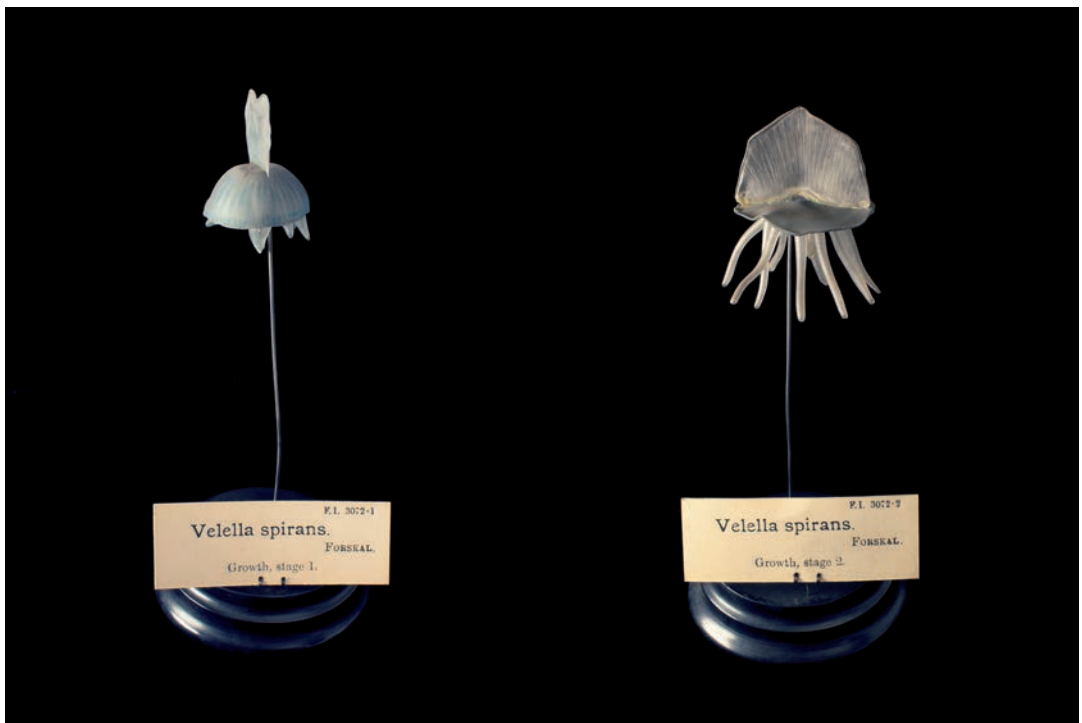
Blaschka Number 216. *Porpita mediterranea* 1884.137.59



Blaschka Number 220. *Stephanomia canariensis* 1884.137.36



Blaschka Number 222. *Vellela spirans* 1884.137.54



Blaschka Number 223 . *Vellela spirans*, stages of development 1884.137.111



Blaschka Number 224. *Aurelia aurita*, adult 1884.137.32



Blaschka Number 225. *Aurelia aurita*, stages of development 1884.137.24



Blaschka Number 227. *Chrysaora hysoscella* 1884.137.104



Blaschka Number 235 . *Pelagia noctiluca* 1884.137.105



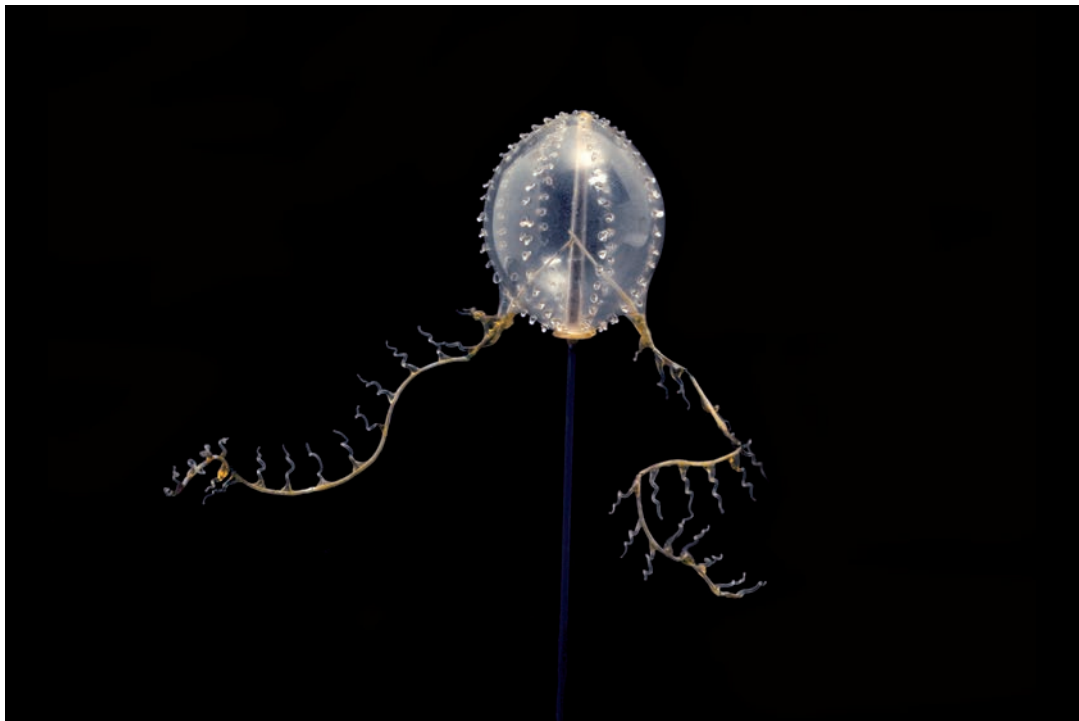
**Blaschka Number 238.** *Rhizostoma pulmo* 1884.137.68



**Blaschka Number 241.** *Beroë punctata* 1884.137.52



Blaschka Number 242. *Cestum veneris* 1884.137.127



Blaschka Number 247. *Pleurobranchia pileus* 1884.137.53





Blaschka Number 249. *Comatula hamata* 1884.137.13



Blaschka Number 252. *Amphiura filiformis*, stages of development 1884.137.25



Blaschka Number 267. *Cucumeria hyndmannii* 1884.137.84



Blaschka Number 274. *Holothuria tubulosa* 1884.137.75



Blaschka Number 277. *Psolus phantapus* 1884.137.2



Blaschka Number 282. *Synapta beselii* 1884.137.23



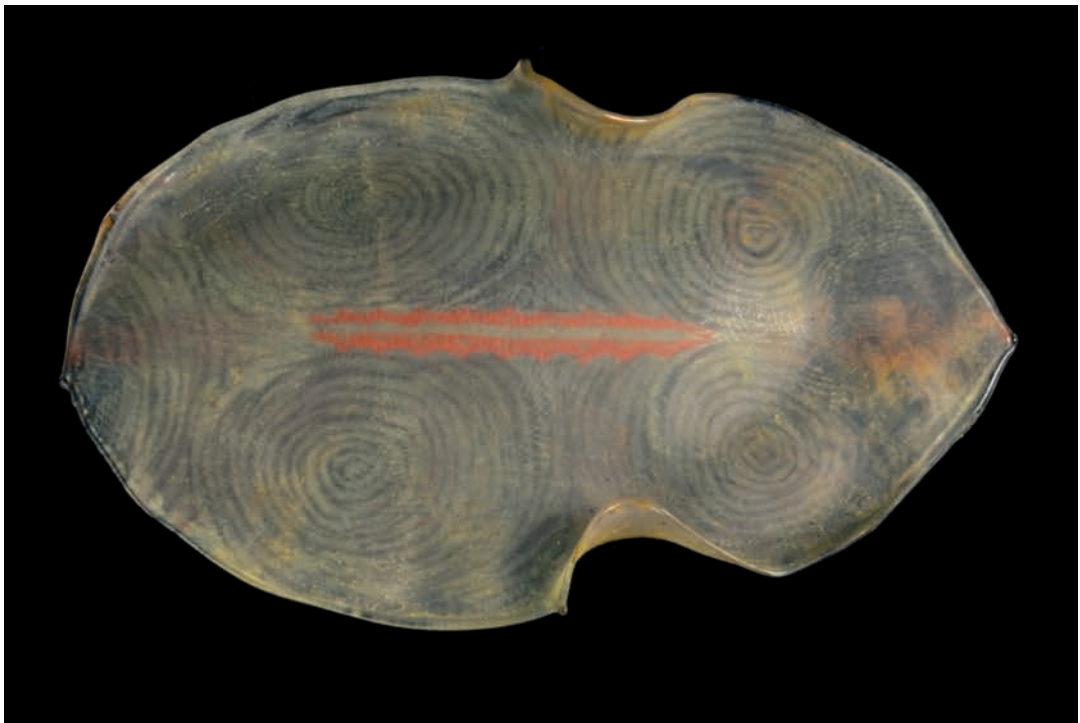
Blaschka Number 289. *Synapta oceanica* 1884.137.3



Blaschka Number 291. *Thyone fusus* 1884.137.82



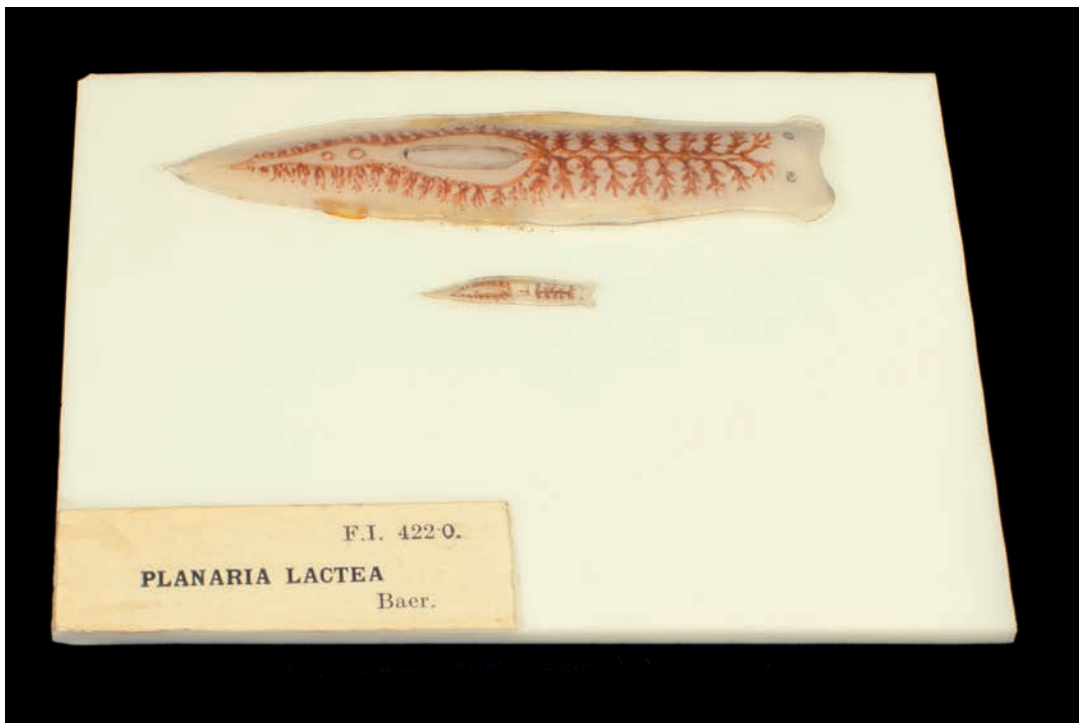
Blaschka Number 295. *Borlasia trilineata* 1884.137.49



Blaschka Number 297. *Centrostomum polycyclium* 1884.137.97

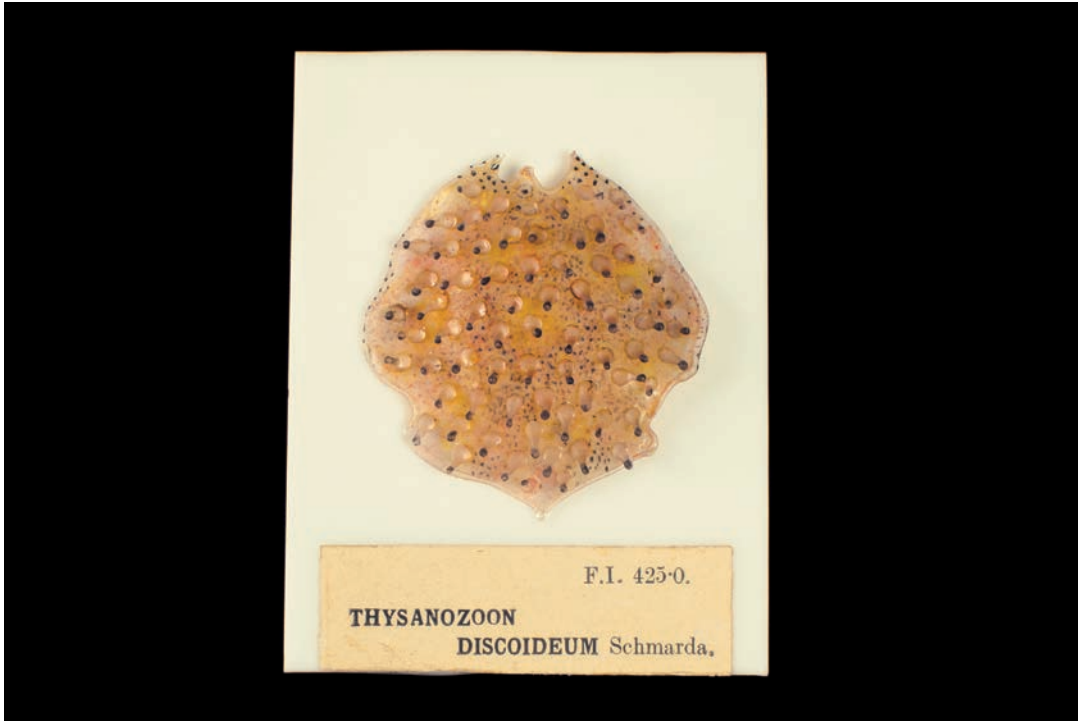


Blaschka Number 306. *Neckelia macrorrhochma* 1884.137.37

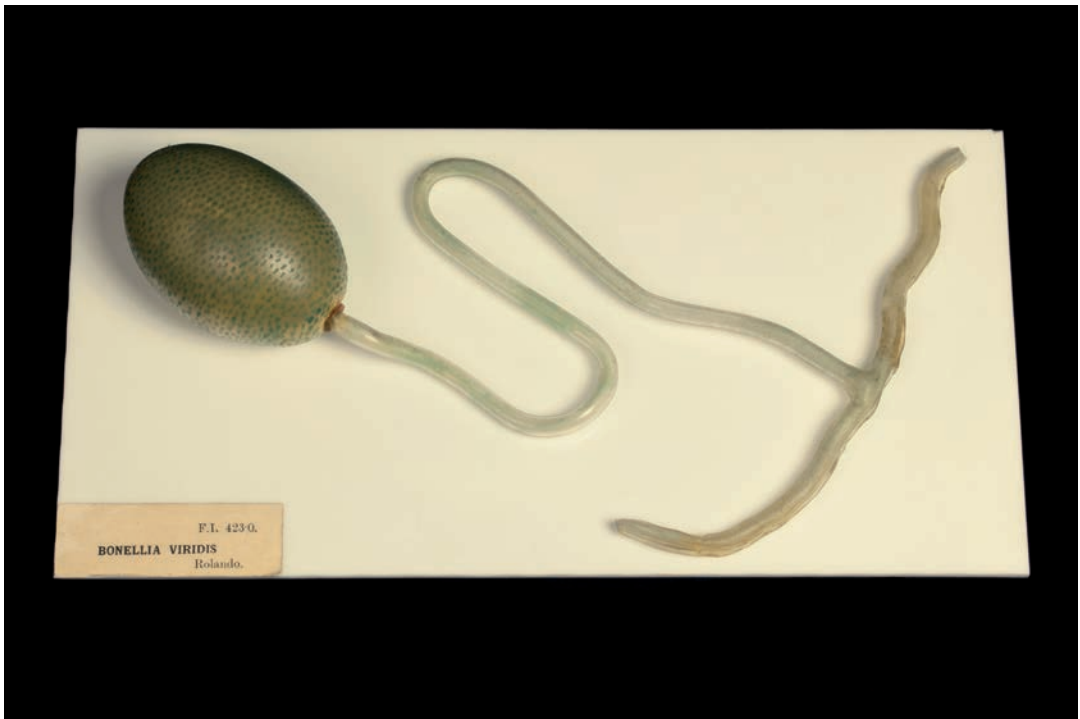


Blaschka Number 308. *Planaria lactea* 1884.137.128





Blaschka Number 320. *Thysanozoon discoideum* 1884.137.112



Blaschka Number 324. *Bonellia viridis* 1884.137.48



Blaschka Number 326. *Priapulus caudatus* 1884.137.125



Blaschka Number 328. *Clepsine marginata* 1884.137.35



Blaschka Number 331. *Arenicola marina* 1884.137.9



Blaschka Number 334. *Eunice norvegica* 1884.137.90



Blaschka Number 337. *Nereis margaritacea* 1884.137.20



Blaschka Number 339. *Phyllodoce paretii* 1884.137.18



Blaschka Number 342. *Sabella penicillus* 1884.137.98



Blaschka Number 343. *Serpula contortuplicata* 1884.137.15

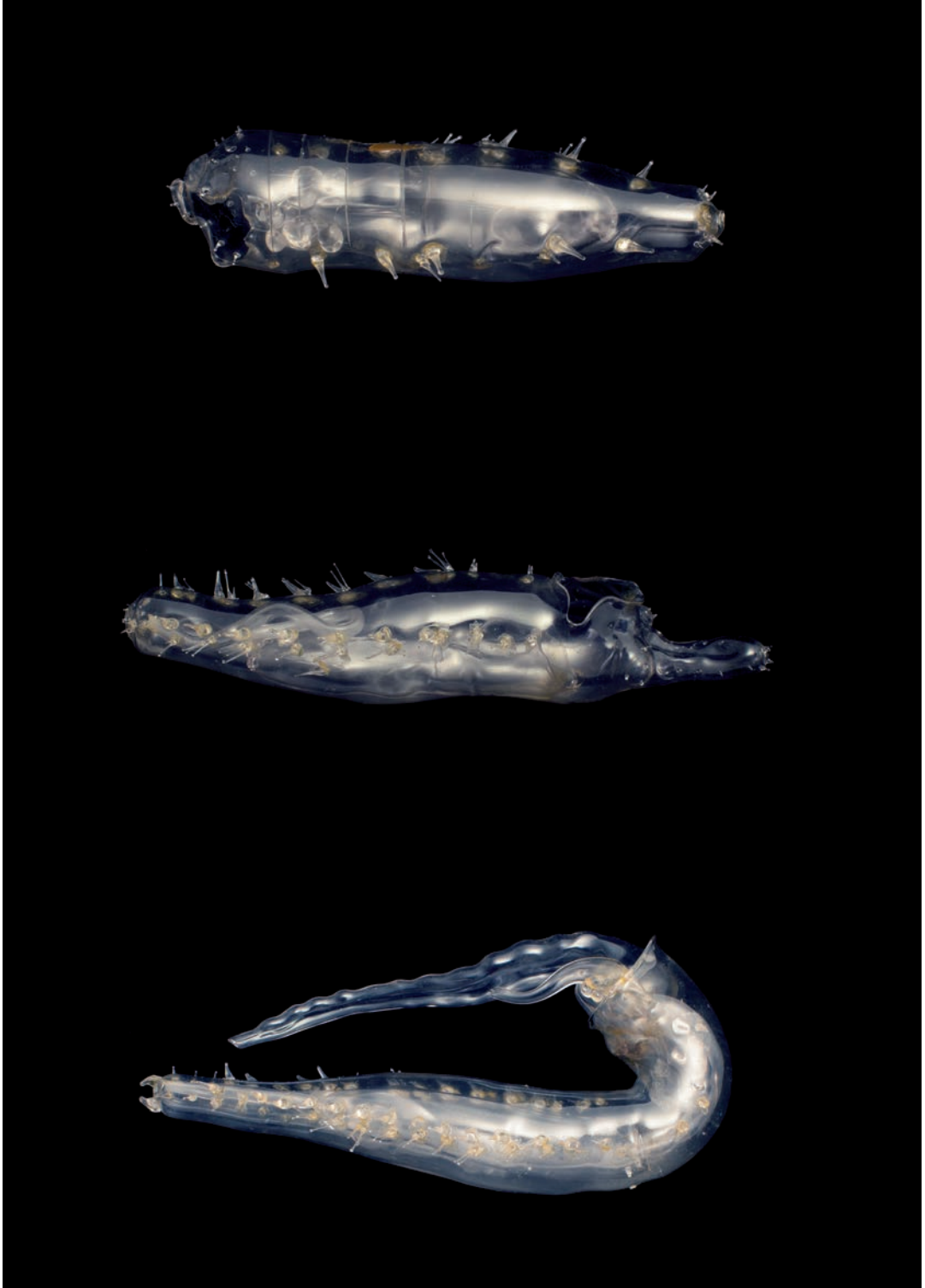


Blaschka Number 344. *Siphonostoma diplochaitos* 1884.137.91



Blaschka Number 348. *Terebella conchilega* 1884.137.22





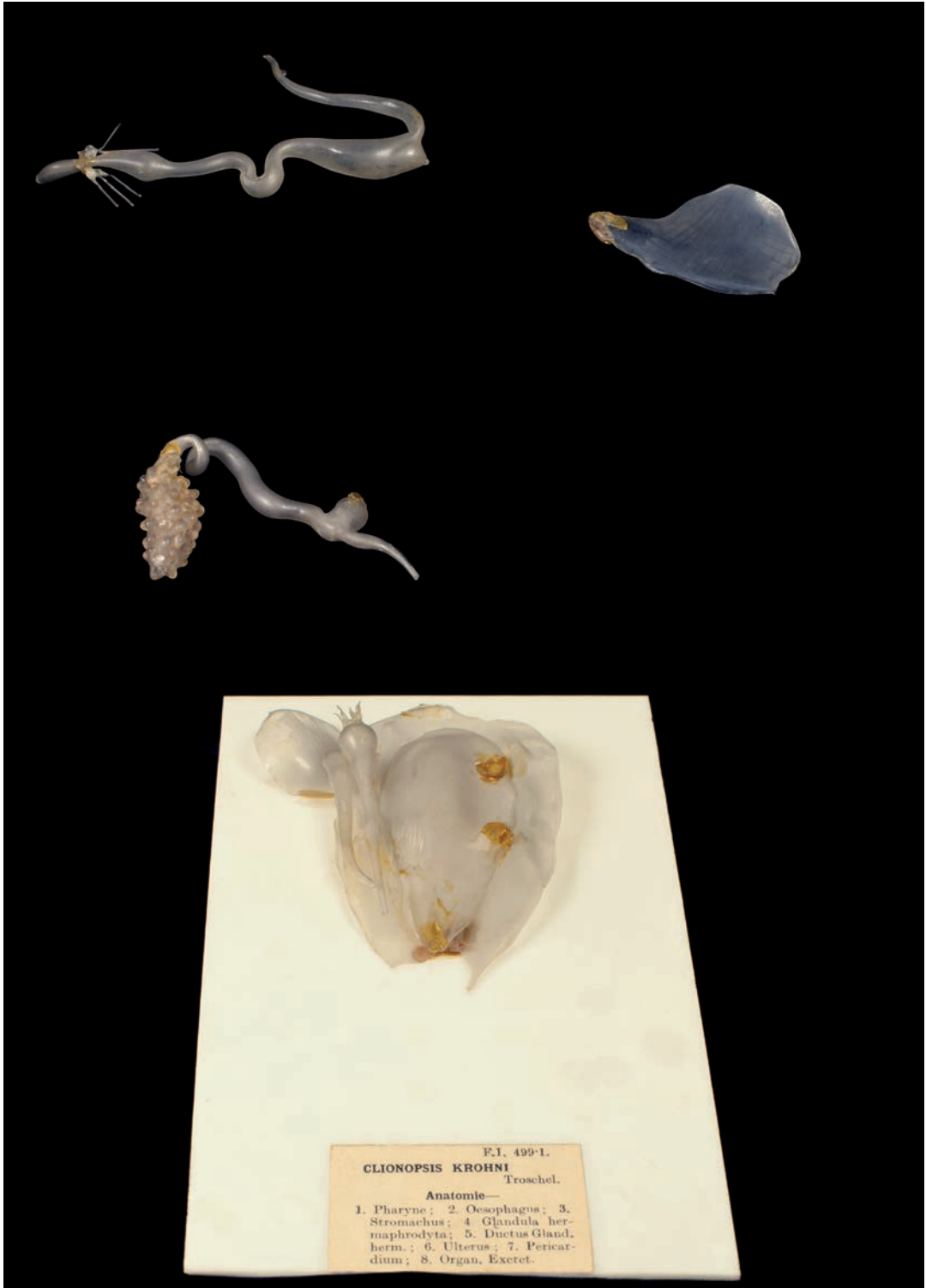
Blaschka Number 349. *Terebella conchilega*, stages of development 1884.137.110



Blaschka Number 352. *Clio borealis* 1884.137.78



Blaschka Number 353. *Clionopsis krohni* 1884.137.100



Blaschka Number 354. *Clionopsis krohnii*, anatomy 1884.137.103



Blaschka Number 359. *Tiedemannia neapolitana*, adult 1884.137.99



Blaschka Number 360. *Tiedemannia neapolitana*, stages of development 1884.137.95



Blaschka Number 361. *Actinodoris australis* 1884.137.93



Blaschka Number 365. *Aeolis exigua* 1884.137.89



Blaschka Number 395. *Dendronotos arborescens* var. *carneus* 1884.137.7



Blaschka Number 415. *Doris formosa* 1884.137.46





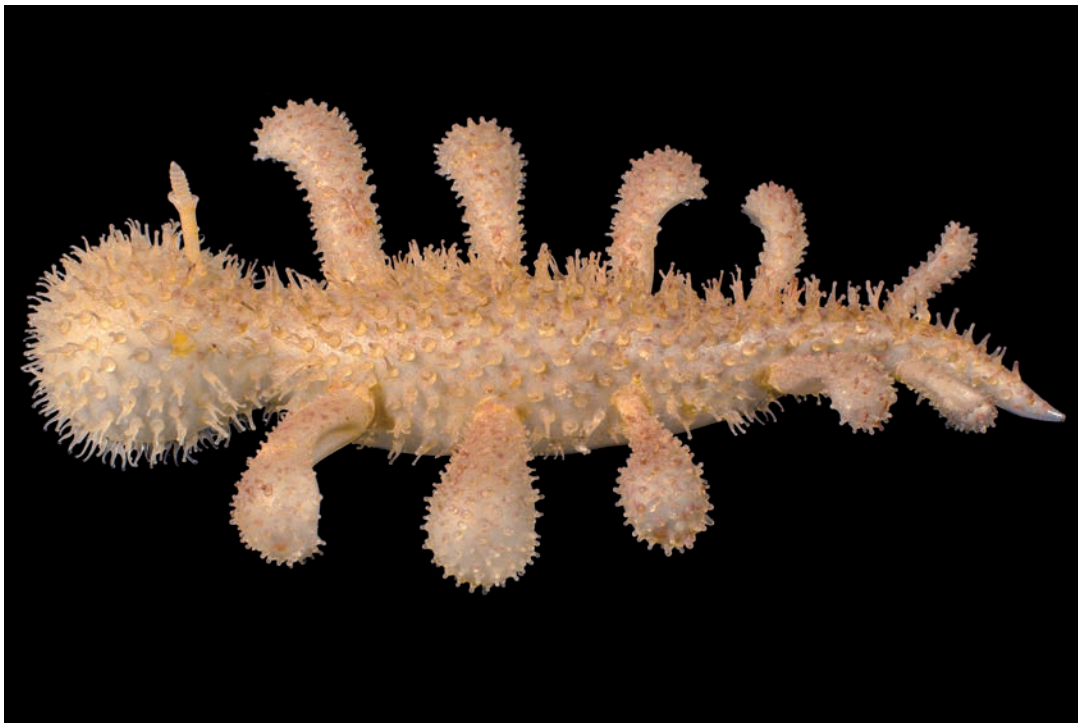
Blaschka Number 431 . *Doto coronata* 1884.137.88



Blaschka Number 432. *Elysia chlorotica* 1884.137.76



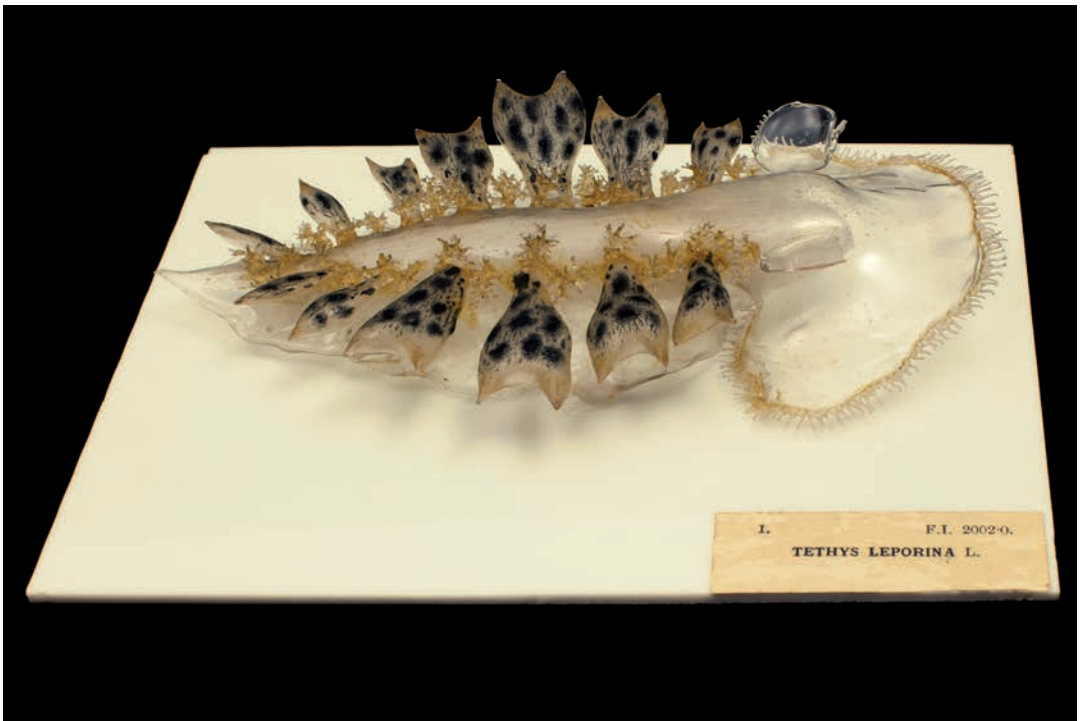
Blaschka Number 455. *Goniodorus verrucosa* 1884.137.117



Blaschka Number 460. *Melibe fimbriata* 1884.137.8



Blaschka Number 467. *Plocamophorus imperialis* 1884.137.116



Blaschka Number 482. *Tethys leporina* 1884.137.12



Blaschka Number 489. *Aplysia inca* 1884.137.11



Blaschka Number 491. *Dolabrifera fusca* 1884.137.94





Blaschka Number 423. *Doris pantherina* 1884.137.60



Blaschka Number 464. *Phyllobranchus orientalis* 1884.137.87



Blaschka Number 507. *Planorbis corneus* 1884.137.83. Note the unorthodox shell.



Blaschka Number 510. *Arion empiricorum* var. *ater* 1884.137.45





Blaschka Number 513. *Arion empiricorum*, anatomy 1884.137.50



Blaschka Number 525. *Helix pomatia* 1884.137.86. Note the body appears to represent *Testacella haliotideia*



Blaschka Number 526. *Helix pomatia*, anatomy 1884.137.69



Blaschka Number 527. *Limax agrestis* 1884.137.77



Blaschka Number 529. *Limax arborum* 1884.137.19



Blaschka Number 534. *Limax maximus* 1884.137.1



Blaschka Number 526. *Carinaria mediterranea* 1884.137.14



Blaschka Number 549. *Argonauta argo*, female 1884.137.10



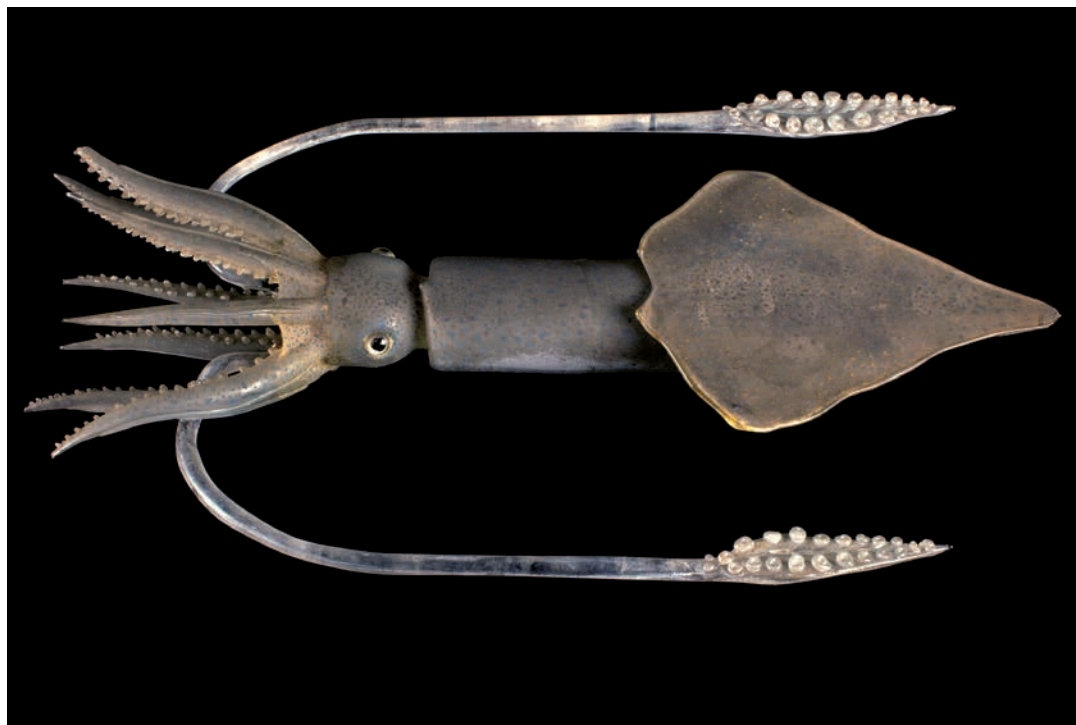
Blaschka Number 550. *Argonauta argo*, males, 2 stages 1884.137.16



Blaschka Number 556. *Histioteuthis bonelliana* 1884.137.39

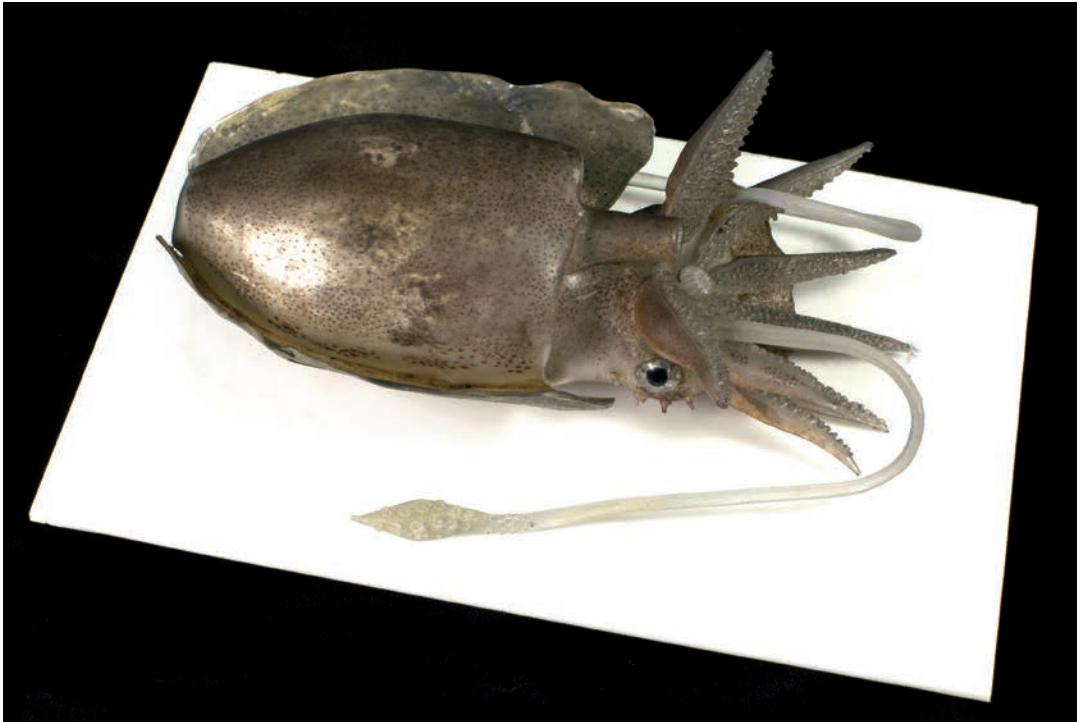


Blaschka Number 558. *Loligo vulgaris* 1884.137.6



Blaschka Number 583. *Onychoteuthis lichtensteinii* 1884.137.17





Blaschka Number 589. *Sepia officinalis* 1884.137.38



Blaschka Number 592. *Sepiolois rondeleti* 1884.137.67





Appendicularia flagellum

Blaschka Number 599, *Appendicularia flagellum* 1884.137.80



Botryllus gemmeus

Blaschka Number 602, *Botryllus gemmeus* 1884.137.129



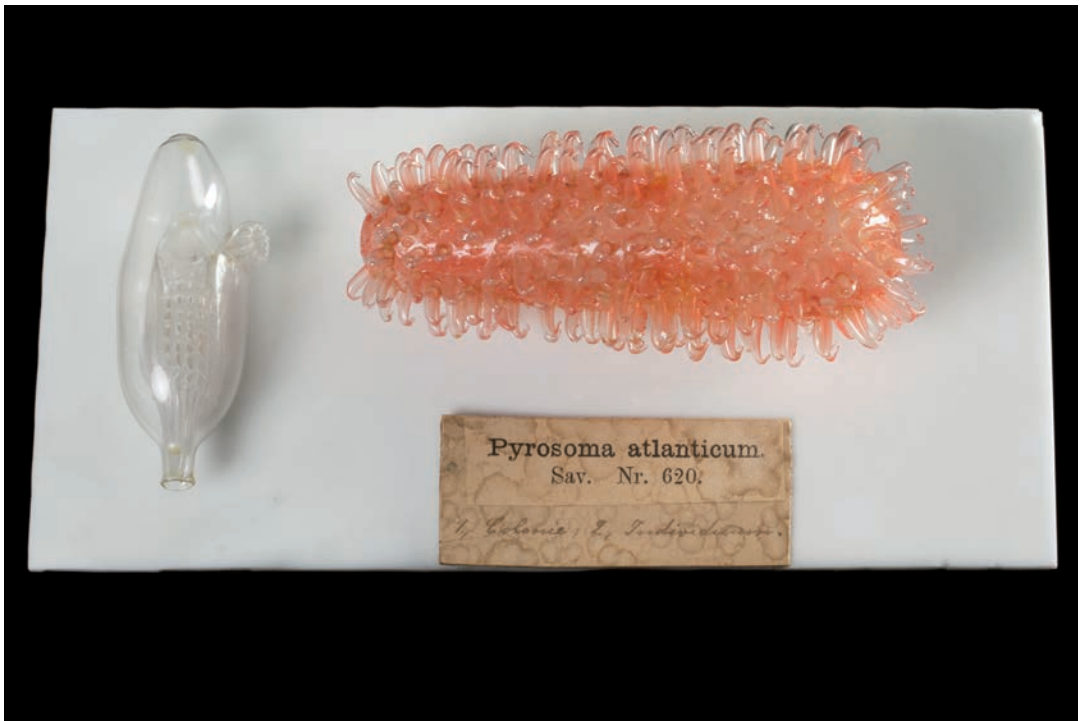
Blaschka Number 609. *Boltenia rubra* 1884.137.85



Blaschka Number 613. *Clavellina lepadiformis* 1884.137.119

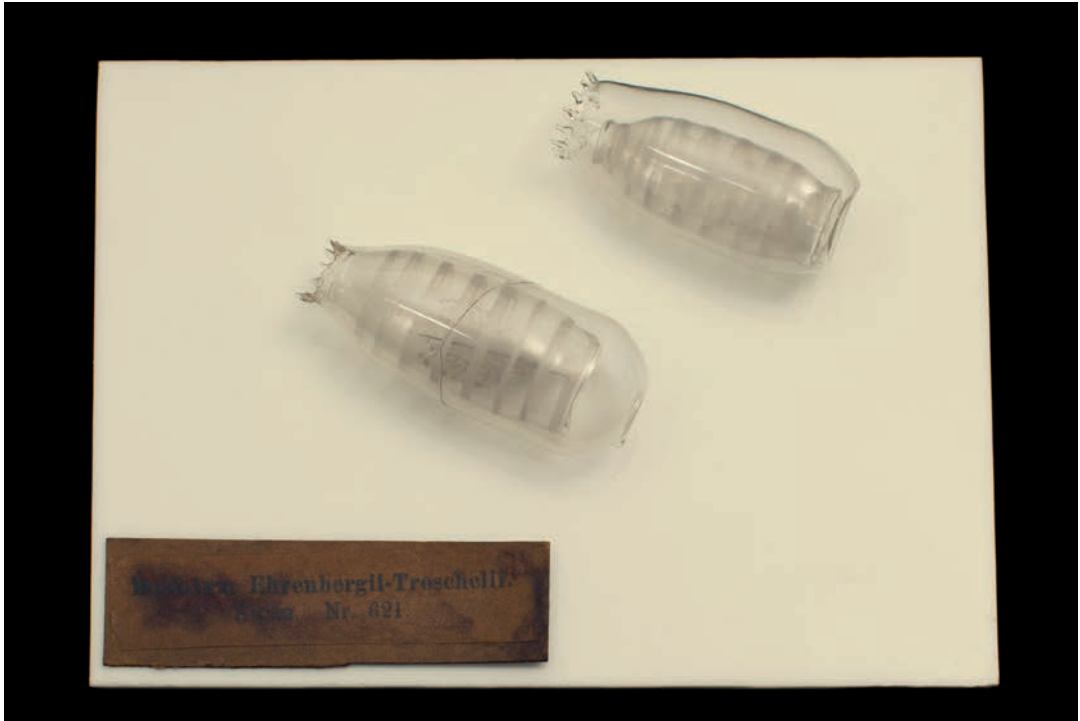


Blaschka Number 615, *Cynthia pyriformis* 1884.137.4



Pyrosoma atlanticum.  
Sav. Nr. 620.  
*H. Blaschka, L. Lindner, 1884.*

Blaschka Number 620, *Pyrosoma atlanticum* 1884.137.66



Blaschka Number 621. *Doliolum Ehrenbergii-Troschelii* 1884.137.79



Blaschka Number 626. *Salpa democratica-mucronata* 1884.137.51



Blaschka Number 627, *Salpa pinnata* 1884.137.47



Blaschka Number 618, *Phallusia pustulosa* 1884.137.58

## J H Menzies: a reappraisal

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Principally active from the early 1880s to c. 1910, John Henry Menzies (1839–1919) was a carver in wood and stone, and an architectural designer. About 80 pieces of his furniture are extant; Rehutai, one of the three houses he designed and decorated also survives, as does his church, St Luke's. He also produced the pattern studies for *Maori Patterns Painted and Carved* (1910, 1975). Menzies' creative period coincided with the growth of the New Zealand Arts and Crafts movement and with New Zealand's search for a national identity. His creative output reflected both of these currents. In particular, the indigenous is apparent in his work, both flora, and the focus of this essay, the figures and patterns of Māori art. The surviving works, with the interpretations and themes they embody, serve to inform us about identity formation and Pākehā perceptions of Māori art. Several family histories tell us about Menzies' life, particularly as a settler, farmer and patriarch. However, surprisingly, he has received little scholarly attention as an artist and interpreter of burgeoning national identity. This essay reviews the likely influences of anthropology, the role of identity, and some of Menzies' main decorative themes, with a particular focus on the works that exist in the public realm.

**Keywords:** J H Menzies, Māori art, architectural design, carving, kōwhaiwhai painting, museum collections, ethnology, whare whakairo, art history, folk art furniture, decorative and applied arts, Menzies Bay, Banks Peninsula, Canterbury Museum, Akaroa Museum, Museum of New Zealand Te Papa Tongarewa.

### Introduction

John Henry Menzies (1839–1919) (Fig. 1) was from the North West of England. The son of a cotton merchant, he spent his formative years at Ringway in rural Cheshire, a short distance from Manchester, the commercial centre where his father conducted his business (Menzies 2003). Dissatisfied with his first occupation working in his uncle's maritime insurance firm (Jones, Palmer and Company), he emigrated to New Zealand in 1860 with the intention of farming. After owning a succession of three farms in Southland, he purchased a fourth at an eastern bay of Banks Peninsula, where he moved with his family in 1877. It has become known as Menzies Bay. Here Menzies carved furniture and designed and decorated three houses and a church during a creative period that began about 1882 and ended around 1910

with his retirement to Christchurch. Menzies carved prolifically incorporating contemporary fashionable botanical reliefs, Celtic motifs, text, but most importantly, as this paper will discuss, Māori designs.

To date, Menzies' creative output is under-researched, and occupies a peripheral position in the art history of the era. However, the way in which it addressed the currents of a burgeoning national identity cannot be denied. This research calls for his creative output to be reassessed, contextualised and reconsidered as of outstanding national significance.

About 80 pieces of carved furniture survive. These are mostly in the private ownership of descendants with a small number in public museums. Menzies built and decorated three houses for his family. The first, the Menzies





**Figure 1.** John Henry Menzies (1839–1919), c. 1900. Private collection

Bay homestead Glen Mona built 1878–1879, was carved with botanical motifs (Anonymous 1890; Menzies 1970). Rehutai, built 1894–1895 for his son, survives and was designed around a central hall in the form of a Māori meeting house. In 1907, Glen Mona burnt down, and its replacement followed the Rehutai model, but sadly it also burnt down in the late 1920s. No interior photographs of these lost houses are known. In 1905–1906 Menzies designed, built and extensively decorated St Luke’s Church at Little Akaloa; this and Rehutai are rated Category 1 buildings on the Heritage New Zealand List (Heritage New Zealand 1993, 2001). During the 1880s Menzies developed his chiefly botanical carved decoration to incorporate various Celtic motifs, text, and an extensive array of Māori figures and patterns; the latter being used extensively. In 1910, *Maori Patterns Painted and Carved* was published, a collection of his pattern studies with an introduction detailing his understanding of Māori art. The original painted pattern studies

for this publication survive as a single bound volume in private ownership. In addition, an (as yet) un-catalogued number of figurative sketches and paintings also survive, again in private ownership.

Menzies had limited contact with Māori and Māori culture, and there is no evidence of Māori carving tutors. Although Menzies sought to copy and reproduce Māori patterns accurately, there is no suggestion that origins, meanings or indigenous uses were either understood or of concern. Rather, his use of Māori patterns was at his own aesthetic discretion. When he began carving in the 1880s the only significant text illustrating Māori art was Owen Jones’ *Grammar of Ornament*, first published in 1856. Jones approved of Māori design but although the book contained chromolithographic illustrations of Māori art it did not supply enough illustrated examples to account for the variation in Menzies’ art in the 1880s and 1890s. It was not until Hamilton’s *Maori Art* of 1901 (originally published in parts from 1896–1900) that a substantial illustrated text on Māori art became available. Yet Menzies had become a proficient carver of Māori patterns during the 1880s.

There is little direct evidence of the extent of his research into Māori art. Unfortunately the sort of working drawings, notes and papers one would normally expect an artist to generate have not survived, neither has Menzies’ library. The house fire at the first Bay homestead in 1907 razed the building (Anonymous 1907): the likely explanation of the lacuna in archival sources. We do not know his design process other than he was associated with Christchurch furniture makers A J White & Co (Anonymous 1895a, 1895b). Anecdotally he appears to have ordered furniture, had the parts sent to him for carving, and then sent the carved pieces back to the cabinet maker for final assembly and finishing. Menzies rarely signed or dated his work, so it is difficult to develop a detailed chronology of his output and thereby identify changes and currents in his expression. However, his aims and intentions



can be extrapolated from the works and a small amount of published material.

Menzies wrote letters to the *Press* (1899a, 1899b, 1910b), he was mentioned in several newspaper articles (Anonymous 1890, 1895a, 1895b, 1898a, 1898b, 1910) and a draft version of his introduction to *Maori Patterns* (1910a) survives in the Canterbury Museum collection (accession number 2003.52.54). These reveal he learnt patterns by studying photographs as well as direct study of carved objects, although sources are not named in either case.

In this essay I will examine the local possibilities for the acquisition of knowledge about Māori carving from two perspectives. First, I will consider the people available locally who were capable of acting as informants on the subject. Second, I will consider where Menzies could have accessed carvings. Direct study of Māori carvings would have been necessary to achieve the fine detail that Menzies reproduced in his carving. Since there is no evidence of Māori tutelage, I work from the premise that his acquisition of knowledge about Māori art was mediated through Pākehā channels in the form of ethnologists and private and public collections.

Various family histories record his life, occupation and achievements. The main source regarding Menzies' early life is his *Family history to 1877* (2003). This records no formal art training, and makes just one mention of carving as a schoolboy, and only in passing. The book's main focus is on farming. Menzies' wife Frances' *The Recollections of Frances Elizabeth Menzies* (2004) records family life. Janet Hector, a descendant who edited the volume for publication, appended transcribed letters and a chronology of family events. Menzies' grandson Ian (1970) wrote about his grandparents and life at Menzies Bay drawing on their writing, and adding in recollections of their contemporaries. However, in these family histories, Menzies' carving was considered a hobby as his occupation was farmer, even though they observed that carving was increasingly his major preoccupation.

Menzies' chief audience was his family. Today, most of his surviving furniture remains in family ownership. This family focus has done little for his wider reputation as most of his output has effectively remained hidden from public and scholarly view.

Menzies has received rather scant critical attention, the main sources being Halliday (1996a, 1996b), mentions by Petersen (2000, 2001) and the research and findings of Heritage New Zealand undertaken in the aforementioned building listings. The overall brevity in coverage, and the particular foci of these sources, has led to an effective compartmentalisation of his work. He is viewed as an amateur architectural designer (Lochhead 1999: 173; Halliday 1996a; 1996b), or as working in the arena of decorative and applied arts (Petersen 2000: 61; 2001: 113; Calhoun 2004: 8), or as an ethnological recorder (Neich 1994: 32), never as all three at once.

The aim here is to develop on the current critical attention by producing an overview of Menzies' creative period, which takes a holistic view of his art. In the course of the essay I will identify some likely sources and influences, and draw out themes that are apparent in the body of work. The contention is that Menzies should be understood as an artist and a craftsman in quite a contemporary sense – as someone who was enhancing everyday architecture, using it to engage and influence the viewer through imagery that addressed identity and nationality. This was achieved in different ways – by putting carved furniture into existing homes and by designing his own buildings, thereby creating his own version of the New Zealand house or church. Much of his artwork, whether furniture or buildings, can be read as addressing the question of the appropriate form of decoration or architecture for New Zealand. Although Menzies produced his work in the relative isolation of Menzies Bay, his display of carved furniture in Christchurch exhibitions in 1882, 1895 and 1899 (Canterbury Society of Arts 1892 in 1881–1910; Anonymous 1895a, 1895b; JH Menzies 1899b), his letters to the

*Press* (1899a, 1899b, 1910b), his book (1910a), and his creation of a public building (St Luke's) show he participated in the wider society. Certainly he appropriated indigenous art, but the focus here is what he did with it, not the politics of the act of appropriation.

### **Understanding Māori carving**

In the absence of a surviving archive, it is important to understand the context of Menzies' exposure to Māori art, and his access to understanding it. There is some surviving evidence that he conversed and corresponded with ethnological researchers, and there were a number conveniently available locally. The following considers the people Menzies could have met with to discuss the subject of Māori art and concludes with an examination of Menzies' introduction to *Maori Patterns Painted and Carved* where he explains his understanding of Māori carving. I will begin by briefly reviewing the position of anthropology in New Zealand at the time.

During this period, ethnologists were actively informing Pākehā society about Māori culture and the Māori past. This played an important role in the absorption of aspects of the indigenous into national identity. Sorrenson (1979), Meijl (1996) and Belich (1996, 1997, 2001) have historicised the anthropological writing. Across the board was an undercurrent belief that Māori were a 'dying' race, a convenient myth suggesting the land was being left vacant for the new settlers. At the extreme, the likes of Stevenson Percy Smith (1840–1922) and Edward Tregear (1846–1931) created fanciful myths in their attempts to explain the origins of the Māori. While Menzies was creatively active (1880s–1910), the anthropology effectively united Māori history and settler history into a single linear narrative. As Kynan Gentry has summarised, Māori history was presented "as a warm-up to the main event of European arrival, both enlivening and lengthening New Zealand's history and adding to it a dash of myth and romance" (Gentry 2015: 61).

Interestingly, this occurred during the period Belich (2001) terms "recolonial" (c. 1885–1901), where New Zealand was identifying more closely with Britain than in its earlier colonial phase. As Stafford and Williams (2006) note, it was also a period where the colonial-born children of settlers were coming of age. Although Britain, or England, was the mother country and home, many of this generation had never been there. It was New Zealand that they knew and identified with. During this period the romantic Maoriland imagery was created in literature (Stafford and Williams 2006), the haka was adopted as the national war dance (Gentry 2015: 76), and the kiwi and silver fern began their roles as national symbols (Wolfe 1991).

Although there is a paucity of documented evidence, by considering who was available within Menzies' local and regional ambit (Gardner 1979), it is possible to reconstruct a likely network of contacts that informed Menzies about Māori past and culture. This group was interconnected professionally and socially forming a loose community or interest group in Māori ethnology. Unlike S Percy Smith and Tregear, these researchers, are not remembered for their "rampant" theorising (T O'Regan in Beattie 2009: 7).

The most convenient contact by locality was Reverend James West Stack (1835–1919). Stack served as Anglican missionary to Canterbury Māori living near his flock at Tuahiwi and frequently visited Banks Peninsula Ngāi Tahu (Reed 1935b). He was relieving minister at Little Akaloa and then vicar of the nearby parish of Duvauchelle from 1879 to 1883, effectively making him Menzies' parish priest just prior to the beginning of Menzies' creative period (Beckett 1960: 29; Murray 2012). Stack was the New Zealand-born son of a missionary and had plenty of exposure to Māori architecture and decoration during his childhood at North Island missions (Reed 1935a). On his return as a missionary he had also seen the famed decorated whare karakia (Māori church) at Otaki as well as Tamihana

Te Rauparaha's decorated house there (Reed 1935b). He was fluent in te reo Māori, and was a friend of many prominent Māori and Pākehā. He was an ethnological recorder, published histories on Banks Peninsula and South Island Māori (1884, 1898), presented papers to the Canterbury Philosophical Society and was involved in obtaining and erecting the Ngāti Porou meeting house Hau Te Ana Nui o Tangaroa at Canterbury Museum in 1874 along with naturalist Walter Buller, another missionary's son (Ellis 2016: 214–227; Stack 1875: 172–176; Haast 1948: 683–685). Stack was a close friend of Dr Julius von Haast, the first director of Canterbury Museum, and researched anthropological questions on his behalf including questions posed by Haast's correspondent, Charles Darwin (Reed 1935a). Stack would have been a valuable source of information about Māori culture and art for Menzies, and an insert in Canterbury Museum's bound copy of *Maori Patterns* (1910a) credits Stack as supplying 11 of the Māori proverbs reproduced in the book. Moreover, Stack was able to introduce Menzies to a network of informants and fellow researchers.

Stack's friend Tamati Tikao, an Anglican lay preacher who was living at Wainui on Akaroa Harbour in the 1880s, would have made a useful contact for Menzies. Tikao was the brother of Piuraki or John Love Tikao, signatory to the Treaty of Waitangi at Ōnuku, also in Akaroa Harbour, in May 1840. He is known to have made two mere (greenstone clubs) for Stack, which were delivered to Julius von Haast who in turn sent them to Dr Ferdinand von Hochstetter in Vienna (Reed 1935a: 77, 80). Tikao also produced a large pātiti parāoa (axe-shaped whalebone weapon) (Canterbury Museum accession number (CMA) 1952.30.498). However, these weapons were undecorated and Tikao is not known to have been a wood carver. Menzies may also have consulted Tamati's son Teone Taare Tikao, noted for his knowledge of Ngāi Tahu oral history and traditions, and the source on Ngāi Tahu cultural practice in *Tikao Talks*

(Beattie 2009). However, there is no mention of woodcarving in this book.

Hakopa te Ata o Tu (c. 1798–1883) from Kaiapoi was another of Stack's Māori informants that Menzies could have consulted. Stack wrote to Haast from Duvauchelle in 1882 with his "Notes on Maori manufacture of greenstone" based on an account from Hakopa (Reed 1935a: 270–274). Stack spoke highly of Hakopa, describing him as "my old friend" and as "one of the few real old Maori chiefs – one who knows what he is talking about when you ask him questions relating to the customs of the people prior to the advent of the Pakeha" (Reed 1935a: 270). Given his proximity to the whare whakairo (carved house) Tutekawa at Tuahiwi north of Christchurch (discussed below), Hakopa may have been a valuable source on its history and meanings. However, as with Tikao, perhaps not in the practicalities of carving.

Stack knew the Williams family of North Island missionaries. Herbert Williams recorded and wrote about the kōwhaiwhai rafter patterns reproduced in Hamilton's *Maori Art* (1901). Given the similarity of Menzies' and Williams' approach to recording Māori patterns the prospect of some prior collusion is tantalising although no supporting evidence has been uncovered to date. Menzies certainly corresponded with Augustus Hamilton in 1899 (Alexander Turnbull Library MS-Papers-0072-04). Although Menzies was well established in his carving by this point, Hamilton would nonetheless have been a source for expanding Menzies knowledge of Māori patterns, including through the supply of photographs.

Samuel Hurst Seager, the Christchurch Arts and Crafts architect and a teacher at the Canterbury College School of Art was another likely contact. Menzies would have encountered Seager through the Canterbury Society of Arts, where he is listed in the catalogues as an Ordinary Member from 1892 to 1897 (Canterbury Society of Arts 1881–1910). Seager published his *Notes on Maori Art* in 1900, although he was outspoken in his belief

Māori art and architecture was inappropriate as the basis for a national style (Lochhead 1999: 174). Seager and Stack were both involved in the Kaiapoi Pā monument (1898–1899), along with Charles Kidson (another teacher at the School of Art) who produced the carved elements (Stocker 2004). Although Kidson reproduced Māori carvings in Mount Somers stone for the monument it is unlikely this was an influence on Menzies who was already an experienced carver by this time, including in stone in the decoration of the fireplaces at Rehutai.

A single reference suggests Edward Tregear was also a contact. He is credited with supplying Menzies with a translation of a Māori proverb (Anonymous 1898b).

Overall, although many of these contacts may have claimed expertise in their knowledge about carving, none (with the exception of Kidson) are known to have been carvers in their own right. It appears that Menzies walked that path alone, creating his own approaches to reproducing the patterns and figures of Māori art. Nevertheless Menzies was able to access a network of expertise on Māori art and culture generally. It was in Menzies' introduction to *Maori Patterns* (1910a), late in his carving career, that the distillation of his understanding of Māori carving was most fully expressed:

*Maori carving, as practised among the Maoris long ago, was a sacred work .... Every pattern had a name, and also a Karakia belonging to it .... no carving could be done amongst the Maoris except by a man of good birth. If any mistake – gross, wilful mistake – in the pattern was made, then the work became very unlucky .... In fact, a Hara had been committed, and ill-luck would follow. ... the various patterns once had a meaning ... but ... the meaning was lost long ago, just as the meaning of most of the Karakias was probably lost long ago too. .... Maori carving was done in the old days, especially the beautifully and finely carved weapons and boxes, by old men. They sat on a sand hill, or in some sheltered place, with a small boy to watch*

*for enemies, and carved; they carried the work with them on a journey as well. Also there were guilds of carvers who went from place to place, and charged a high price for their work .... Maori carving long ago was an extremely slow and carefully executed work, done without the aid of iron or steel tools; it was done with shells and greenstone, and sometimes burnt out, I think, as well. ... I think that at the present day many of the young Maoris dread doing Maori carving, not knowing the Karakias; they consider it a rather doubtful art, surrounded by a risk of possible ill-luck. ... many of these patterns could be both painted and carved .... I have tried my best to very carefully reproduce these beautiful patterns. ... They belong only to New Zealand .... it now remains for some Maori of good birth to improve on what I have done.*

Menzies indicates an understanding that carving was tapu (sacred) performed by men of high birth, supplying a description not incompatible with Neich (2008) or Tikao's discussions of karakia (incantations) and the handing down of knowledge (Beattie and Tikao 1939). The description of the old men carving is reminiscent of Stack's 1882 'Notes on Maori manufacture of greenstone' for Haast (Reed 1935a: 270–274), especially the final comments on the making of a mere. Menzies proposes that the art was in danger of being lost because of disruptions in the passing of the correct karakia (prayers) and tikanga (rituals) from one generation to another. Without that knowledge the younger generation believed they would put themselves in danger if they were to begin carving. Implicit is that this disruption was caused by population loss, and might allude to the current belief that Māori were a dying race (Sorrenson 1979: 73; Belich 1997: 10–11). Menzies saw his collection of patterns as a way to preserve them and make them accessible, he also saw his work needed carrying forward by Māori. Although not quoted above, he professed a high opinion of woven patterns and urged that a similar book of woven patterns



be produced by a suitably knowledgeable Māori woman. Change had occurred from traditional (pre-European) life but he believed Māori should continue their art (as well as Pākehā like himself). He wrote of his concern for preserving the patterns, but also of their importance to New Zealand (1910b):

*I am anxious that this book of Maori painting and carving shall show to New Zealanders what a beautiful art, belonging only to New Zealand, belongs to them. My object ... was to prevent these patterns – old, old patterns from being forgotten and disappearing like the birds and trees ...*

Māori patterns, in other words, were to Menzies an art form to be saved and valued by the nation.

### Access to carving

Beattie's 1920 investigations (2009) found woodcarving was not being practiced by Ngāi Tahu anywhere in the South Island by the last quarter of the nineteenth century. The traditional craft of carving was outside of the living memory of his informants with only a few surviving examples recalled. Compared with more northern iwi (tribes), woodcarving was never very strong among Ngāi Tahu. A rare example was Tutekawa at Tuahiwi, although this was dismantled by Menzies' time. Despite Menzies living near several Māori communities on Banks Peninsula, there were no major carved works, let alone practising carvers to visit. Certainly J H Menzies (2003) makes no



**Figure 2.** “Nearing completion”, a photograph of the decorated interior of the whare whakairo (carved house) Hau te Ana Nui o Tangaroa showing Pākehā carpenters posing with carvings from the frontage. Among the carved pieces yet to be attached are the koruru (carved face from apex of the maihi or bargeboards) surmounted by a tekoteko (carved figure) at the centre of the group of men. To the extreme right is a pare (carved lintel panel over a door or window) on its side. Photograph by John Bradley & Co, c. 1897, CMA 19XX.2.4905.

mention of experiencing Māori carving before 1877, and in the years after there remains little evidence for Menzies having close contact with Māori carvers or carvings existing in a Māori community context. Therefore, Menzies' exposure to Māori carving is likely to have occurred in Pākehā contexts, in museums and exhibitions, through photographs originating from museums or private Pākehā collectors.

Menzies owned a house in Christchurch from the mid-1880s, which allowed him periods of exposure to urban life (Menzies 2004). This meant Hau te Ana Nui o Tangaroa (Fig. 2), the whare whakairo (carved house) at Canterbury Museum, was Menzies' most convenient subject for first hand study of Māori carving.



**Figure 3.** Sitting room at Puke-Puke showing an arrangement of Menzies' furniture. A pātaka cabinet is centre and on it is a carved bowl. To the right the legs of a carved dining table are visible, with perhaps a carved tray and the leaves of the table against the wall. Bottom left are a carved stool and a copy of *Maori Patterns* (1910). Private collection

Hau te Ana Nui had been erected as an annex to the Museum and was utilised as a gallery space to display the Museum's collection of taonga (treasures). Purchased semi-complete in 1874, its original Ngāti Porou carver Hone Taahu and his apprentice Tamati Ngakaho came to Christchurch to finish the building, which had a fully carved interior and kōwhaiwhai paintings (Ellis 2016: 214–215, 217). To protect the building from rotting in the ground, the elements of the house were attached to a framework built by Pākehā carpenters on a concrete foundation. "Fluted kauri boards were substituted for toe-toe reeds inside, and the outside of the building was covered with corrugated iron, instead of the ordinary covering of raupo and toe-toe" (Stack 1875: 173). It is interesting to note that "fluted" boards were adopted by Menzies in both Rehutai and St Luke's Church; surely he took this idea from Hau Te Ana Nui. Halliday (1996b) believed that patterns from this building were sources for *Maori Patterns* (1910a) based on an annotated copy in Canterbury Museum that reputedly records locations of origin for 40 of the patterns, with 13 coming from that Museum. The provenance of these annotations is unclear but by virtue of its convenience it is a likely source.

Stack was in a position to facilitate Menzies' access to the remains of Tutekawa at Tuahiwi, the closest example of carvings in a Māori community. Beattie mentioned seeing five carved pieces from this meeting house when he visited (2009: 252). Halliday (1996b: 34–38) also saw this source as a likely influence on Menzies' carving.

The only record of contact with Māori carving within a Māori community is from a little-known sketch book by Menzies with the date "30/04/87", owned as a reproduction by the Alexander Turnbull Library and Akaroa Museum. The sketches record a holiday to the thermal spas at Te Aroha, Ohinemutu and Rotorua, showing landscapes, town plans and a sketch of a flowering clematis vine. No Māori art is recorded in the sketches, but contact with Māori art was unavoidable at Ohinemutu where



there was the magnificently carved meeting house Tamatekapua and other carved buildings also. After all, the attraction to tourists was not just the thermal activity, but the opportunity of interaction with the indigenous people and their culture (Stafford 1986: 78). At Ohinemutu, Menzies would surely have observed Māori carvers in action, even if only in the production of tourist pieces (Neich 1983, 2001).

Although not documented as such, this must have been an important moment in Menzies' life as an artist and perhaps he made studies of the art that have not survived. Certainly this trip heralds a period of *whare whakairo* (carved house) influenced art. The first recorded piece of Menzies' furniture with a Māori art influence is in 1890 when he made a chiffonier "representing a Maori whare" (Anonymous 1890). Described among descendants as *pātaka* (storehouse) cabinets or cupboards, three such chiffoniers are known to survive. These comprise a model *whare* or *pātaka* with a central door sitting above a pedestal cupboard, the whole carved in Māori patterns and figures (Fig. 3). In 1892, the Canterbury Society of Arts annual exhibition catalogue lists "Clock case, Maori carving" by Menzies. Only two extant clock cases are known and both incorporate the *whare* design. In these, the clock face is in the centre of a *whare whakairo* model, which is sitting above a case, again all carved in Māori patterns (Fig. 4). The *whare whakairo* form is also seen in an extant bookcase (Fig. 5) and the *raparapa* (bargeboard ends) from a *whare* are incorporated into an armchair. The form of these pieces of furniture is so unusual that Menzies must have either constructed them himself or was very closely involved with the cabinet making. In his architecture from this period the *whare* occurred in the 1894 house, *Rehutai*, and was later used in the second Bay homestead (lost to fire) (Menzies 1970: 94).

During the late 1800s, decorated buildings – meeting houses and *pātaka* – were sought after by private collectors and public museums (such as Canterbury Museum) (Ellis 2016: 215–216). As large works of artistic expression,



**Figure 4.** Long case clock with *whare whakairo* style clock case. Private collection. Photograph: D Smith

they aroused deep interest, and in the context of the dying race myth, their collection in the later nineteenth century was motivated by a desire to "document and preserve traditional Maori culture and art" with an emphasis on "high culture" (Meijl 1996: 325), even though the carved meeting house was a nineteenth century innovation (Ellis 2016: 216). Since his understanding of Māori culture was primarily in a Pākehā context, and since the evidence suggests that Menzies' primary experiences of Māori art were *whare whakairo*, it is perhaps not surprising that the *whare whakairo* form is found incorporated into Menzies' furniture and architecture. The style can be read as an attempt to reconcile his own experience of Māori art, and what he had read and been told, with his artistic endeavours. The incorporation



**Figure 5.** Bookcase in the *whare whakairo* style.  
Private collection. Photograph: D Smith

of the *whare* form is not only a strong design theme, but unique in the nation's furniture and architectural history, although not acknowledged in professional circles at the time.

It is worth pausing here to consider the effect of Menzies' furniture. The introduction of an elaborately carved piece into a domestic room was always going to alter that room by its presence. The majority of his furniture brought Māori carving into family domestic interiors. Pākehā encountering this furniture, or living with it, were confronted with an aspect of indigenous culture, although the indigenous people from where it originated were absent. This might be viewed as an indigenising presence, an insistence by Menzies that Pākehā also owned this culture because it was a culture of New Zealand. However, even in the early twentieth century when the Arts and Crafts movement brought such furniture to the

height of its popularity (Petersen 2000), and references to Māori art became part of design education and practice (Calhoun 2000, 2004), the actual take-up by Pākehā in their domestic interiors was very low (Petersen 2000: 71). Orientalism, that is Eastern cultural themes, and Medieval Revival were far more common at the time in New Zealand interior decoration. This indicates Menzies' commitment to creating a hybrid form of domestic decoration not only as individualistic, but against the grain of professional and popular practice. Menzies' intended effect should not be forgotten, a point I will pick up on below.

### **The buildings**

Although Menzies constructed buildings on his three farms in Southland, none are recorded as decorated (Heritage New Zealand date unknown a, date unknown b).

Of the three decorated houses Menzies constructed at Menzies Bay, only Rehutai survives. His other surviving decorated building is St Luke's Church at Little Akaloa. They are quite different from one another. Rehutai is wooden and Menzies' design for the house represents an innovation in domestic architecture. Conversely, the church is concrete with an interior lined in stone. It follows a traditional cruciform design, and gains its distinction through its elaborate and thorough decoration. These projects were ambitious undertakings, their outcome carefully conceived at the beginning, and their complex decoration executed with energy and flourish.

The Category 1 heritage listings of these buildings is justified by Menzies' reproduction of Māori art, his technical accomplishments and as statements in turn-of-the-century debates about a New Zealand architectural style, with an emphasis on their novelty as Pākehā constructions utilising Māori art (Heritage New Zealand 1993, 2001). However, they should also be valued for the originality of their interiors, and for their continuity with his other artistic endeavours, that is, as key



**Figure 6.** Rehutai Hallway showing the key elements in Māori architecture: central ridge pole painted with kōwhaiwhai (curvilinear) designs, heke (exposed rafters) also with kōwhaiwhai paintings, which lead down to pilasters performing the role of poupou (vertical rafter supports). Photograph: D Smith, 2012

parts of his oeuvre. They are, of course, also artistic works in their own right, expressions of a single creative vision. Nationally they should be valued more highly as examples of Arts and Crafts architecture in the way that (for example) the Charles Rennie Mackintosh library at the Glasgow School of Art (1897–1909) is valued as an art work in its own right and for its contribution to British architecture. Menzies' buildings emphasised the vernacular (a maxim of the Arts and Crafts movement) in his use of local materials and indigenous decorative arts, making a statement for a distinctively New Zealand form of the Arts and Crafts movement.

*Rehutai*: Begun in 1894 and built for his son and daughter-in-law, the heart of Rehutai is a

large hallway 9.5 metres long, 3 metres wide with an open ceiling leading up to a central ridgepole 4 metres above the floor (Heritage New Zealand date unknown b). Although on approach it appears a simple weatherboard house with corrugated iron roof, this ordinary exterior acts as a foil to the decoration of the interior, where the large hall was intended to approximate to the interior of a Māori meeting house (Fig. 6). The house can be seen as a response to the Arts and Crafts principle of taking inspiration from vernacular buildings. The key elements in Māori architecture are present here: heke (exposed rafters) with kōwhaiwhai (curvilinear) designs, which lead down to pilasters performing the role of poupou (vertical rafter supports). Here the poupou are left blank, unlike a meeting house where they are normally carved with ancestor figures. Between these and between the heke are wooden rimu panels moulded to imitate the raupō and toetoe linings traditionally used in Māori buildings. The hall decoration is dominated by painted kōwhaiwhai in red and white supported by painted proverbs in te reo Māori running around the cornice in gold lettering (Fig. 7). Carved tiki heads are at the base of each poupou while the "capital" is carved in a zig-zag pattern (Fig. 8). Eight doorways lead off the hall. The door architraves are painted with simple kōwhaiwhai designs, and reeded panels are also used in the doors.

The principal rooms leading off the main hall have carved stone fireplaces with carved mantelpieces and surrounds, each taking a different theme. The drawing room has a Māori design with elaborately carved surround and mantel supported by manaia (profile) figures, although the carved stone fireplace had been removed when the author visited in 2012 (Fig. 9). This room also has a fretwork frieze in a Māori pattern over each window and as a room division. Reeded wall panelling runs around the perimeter.

Fireplaces in two other rooms are carved with botanical reliefs with obvious national symbolism. One is carved with roses and





**Figure 7.** Hallway, Rehutai, showing kōwhaiwhai painting on heke (rafters) and around doorway. Note text in te reo Māori on cornice and the treatment of the poupou (pilasters). Photograph: D Smith, 2012



**Figure 8.** Tiki heads carved at the bases of the poupou, Rehutai hallway. Also note the panelling between the uprights. Photograph: D Smith, 2012

shamrocks with the Gaelic greeting “Caed mille [sic] failte”. Another has Scotch thistle with a central figure of a savage head in a shield, the Menzies clan crest. A third fireplace also has a clan theme, decorated with thistle and sprigs of rowan or mountain ash (*Sorbus aucuparia*). Another room reputedly had a fireplace carved with native New Zealand birds, although this too was missing in 2012 (Halliday 1996b: 11). The utility side of the house is not decorated.

When lived in, Rehutai was furnished (although not exclusively) with Menzies’ furniture, which incorporated similar blends of carved motifs. A photograph of the drawing room, c. 1894 (Fig. 9), shows a pātaka cupboard completely decorated with Māori carving, a drop front desk decorated with the Mount Cook lily (*Ranunculus lyalli*) on the lid and mountain daisy (*Celmisia* sp.) on the cupboard doors (and no Māori motifs) (Menzies 1970: 30). Two occasional tables are also in the frame, the one in the foreground with Māori designs. Another photograph (undated) of the hallway shows a side table with a tiki head near the base of the leg (Fig. 10), and an armorial chest with

a carved Māori pattern (Fig. 11).

In the blending of botanical and cultural motifs there is a conscious attempt to create not only a distinctive home, but a distinctly New Zealand hybrid form of dwelling. These motifs bring with them ideas of identity, a blend of heritages that contribute to the nation. They recall settler origins (English, Scottish and Irish), albeit with an emphasis on Menzies clan symbolism (he was addressing his son and grandchildren here), living with both the indigenous people and land (represented by flora and fauna). The motifs are brought into everyday presence, a constant reminder at the heart of daily life of where the Menzies’ were from and where they live now. In Rehutai, Menzies developed ideas he had experimented with in the small scale of individual pieces of furniture, elaborating them into a series of architectural spaces. He must have deemed Rehutai a success as he repeated the design for his replacement Menzies Bay homestead in 1907 (Menzies 1970: 94).





CARVINGS AT REHUTAI  
The drawing-room soon after the house was built in 1894.

**Figure 9.** Drawing room at Rehutai, reproduced from Menzies 1970. From left to right are the room's carved fireplace, surround and mantel, a carved drop front desk (entirely botanical in theme), a pātaka cabinet, and an occasional table that appears similar to Figure 19. In front is a carved occasional table. Above the desk is Menzies' figurative oil painting the *Grass Seeders* (Akaroa Museum accession number AK:1967.47.1). Reeded or fluted panelling lines the wall below the dado rail.



**Figure 10.** Side table associated with the Rehutai hallway. The table top is finely carved in a complex pattern. The tiki heads correspond to those carved at the base of poupou in the hall. Private collection. Photograph: D Smith



**Figure 11.** Armorial chest associated with the Rehutai hallway. The pattern is in deep relief. Private collection. Photograph: D Smith



*St Luke's Anglican Church*: A decade after Rehutai, Menzies tackled another highly ambitious project, the building of a church during 1905–1906. In the early years at Menzies Bay he had attended services at nearby Pigeon Bay where Anglican and Presbyterian services were held on alternate Sundays. A Knox church designed by Samuel Hurst Seager was built there in 1899, but by this time Menzies was attending the Little Akaloa parish, where he was a lay reader from 1893 and lay preacher from 1901 to 1914 (J Teal, Archivist, Anglican Diocese of Christchurch pers. comm. 2016).

Menzies had an evangelical upbringing and appears to have dabbled in Presbyterianism (Menzies 2003: 34, 54, 68). Eldred-Grigg (1980) records him as a Presbyterian when noting he gave land to the Church of England to build churches and vicarages in Invercargill and Riverton, a strategy, he suggests, used



**Figure 12.** Nave and chancel of St Luke's, showing part of pulpit (left) altar rail and altar, lectern right. Note the patterned edging to the floor, and the lancet windows. Photograph: D Smith, 2016

to display or establish social status (1980: 81); an interesting interpretation given that Menzies recalled the fuss made around the annual attendance of the landlord of “the whole neighbourhood” at his childhood parish church in Ringway (Menzies 2003: 45), although a spiritual dimension should not be ignored. It is worth noting Menzies paid the majority of the costs of the building of St Luke's, at least £1,000, on top of the labour he put into the project (Menzies 2004: 101). Menzies' religious leanings probably also influenced the church's decoration: there is no figurative carving anywhere in the church, showing the Low Church/Presbyterian distaste for icons in a sacred setting.

Architecturally, St Luke's is a small Gothic revival church that has been described as fitting within the Arts and Crafts movement (Fig. 12). Lochhead wrote that Menzies had forged “an amalgam of Gothic architectural forms, Māori and Celtic decorative motifs and materials from the local environment” (1996: 1). Halliday wrote that in his role as designer Menzies fitted “the Arts and Crafts ideal of the ‘thoughtful labourer’” (1996a: 6). The building does not reference Māori architecture even though the *whare karakia* (Māori church) was an established building type by the late nineteenth century. The *whare karakia* architectural model followed Māori house architecture in its design, with a central ridge pole supported by upright poles along its length, a disruptive design on a small scale (Treadwell 1991; Sundt 1999).

On the whole, Arts and Crafts architecture in New Zealand did not widely adopt Māori design. Lochhead (1999: 174) quotes the Christchurch architect Samuel Hurst Seager, from an article in the RIBA journal 1900:

*Here in New Zealand the only historical examples of Art we have are the work of the Maoris; and these, though excellent examples of savage art, are scarcely suitable as standards on which to found our national taste.*

These comments were repeated in the *Press* (Anonymous 1904), making his stance clear on

a local platform. In light of this, the decoration of St Luke's looks like a riposte writ large by Menzies to Seager. The church is Menzies' showpiece, a virtuoso performance of his carving skill and ability in architectural design.

St Luke's comprises a traditional cruciform floor plan with four sets of triple lancet windows, a belfry and a Gothic arch doorway. It was constructed from concrete made with shingle from Greendale beach (below the site), and the roof was built with locally-milled tōtara (Halliday 1996a, 1996b).

The interior of the church is lined with Oamaru stone and white Mt Somers stone was used for the carved elements. Unlike Rehutai, most of the carving in the church is in stone. The quantity of the interior decoration can, at first, be overwhelming: the pilasters are carved; the corbels and cornices are carved; the rafters are painted with kōwhaiwhai and the purlins and other roof members are painted with text including biblical quotes; a fretwork frieze in a Māori design runs the perimeter; between the

rafters are fluted rimu panels as used in Rehutai. Looking up, the roof space is a network of kōwhaiwhai and text (Fig. 13).

The church furniture utilises a range of Menzies' typical motifs. The stone pulpit is carved with reliefs of Mount Cook lily, clematis, and ferns, with Māori patterned borders, and ribbon banners with biblical quotes. The kōwhai lectern is carved in Māori patterns and inlaid with pāua shell. The stone baptismal font (Fig. 14) utilises Māori and Celtic patterns, text, and a botanical relief of nikau palm fronds around the base. The stained glass windows are also Menzies' design and reference the tukutuku lattice work found in meeting houses. (Figs 13 and 14)

St Luke's was a vehicle for Menzies to bring Māori art together with a range of other motifs into the centre of community life. Through the church he was able to give a distinctively New Zealand visual identity to the site of Christian worship. Like Rehutai, the building is developed from a blend of motifs, symbolising



**Figure 13.** Roof space, St Luke's Church, showing rafters painted with kōwhaiwhai designs in red and black. Other timbers are painted with quotations from the Bible in gold lettering. Reeded panelling is fitted between the rafters. Photograph: D Smith, 2016

that while different points of origin remain distinct, a new identity can be formed through co-mingling and combination. There are also differences to the decorative treatments of Rehutai. The use of Māori patterns is more restrained. The kōwhaiwhai patterns are more controlled and geometric than in Rehutai, fitted in neat lines within the length of each rafter. The choice of the architectural form is also a significant difference to Rehutai. The church is much more self-consciously an Arts and Crafts building with its gothic revival style, suggesting Menzies was making a more formal architectural statement in the only building he created for public use. Overall, St Luke's was not a development upon Rehutai so much as a distinct approach for a different building type.

While the building had a community purpose, it was also personal. It was the Menzies family parish church and the site



**Figure 14.** Baptismal font, St Luke's, decorated with Celtic and Māori patterns, and nikau fronds around the base. Photograph: D Smith, 2016

where Menzies family members performed as lay preachers. As well as an artistic and architectural statement, one cannot ignore the statement of social status this church made as a Menzies-sponsored building, considering his position locally as landowner and employer. There was also a memorial function. The baptismal font was dedicated to the four dead children of John and Frances Menzies, while the church bell was gifted in the memory of his uncle, Reverend Canon Frederick Menzies.

### Maori patterns painted and carved

Menzies' book *Maori Patterns* is the most accessible outcome of his creativity. The original 1910 edition was chromolithographed by Christchurch firm Smith and Anthony (Lovell-Smith 1995). According to an insert in the 1910 edition in the collection of the Museum of New Zealand Te Papa Tongarewa, there was an initial print run of 125 at "a price of £1 1s per set", offered with "a suitable portfolio for holding the drawings at a cost of four shillings". Binding "in any style that may be wished" was also offered, but without price options.

The original painted pattern studies are extant as a bound volume owned by a descendant. The regularity across these 28 pattern studies, their good condition, and the way the patterns are combined in each study, suggest they were produced as a discrete project rather than being a working pattern book collection. While the rich inky colours of the printing has made *Maori Patterns* a collectors' item, a comparison with the original pattern studies shows they fail to capture the subtleties of Menzies' painting, such as his allusion to carved depth and the varicoloured painting of pāua shell (*Haliotis* sp.) inserts.

The following is inscribed in Menzies' hand on the fly leaf of the volume of originals:

*This collection of Maori patterns was made by J. H. Menzies (and drawn by him) of Menzies Bay, Canterbury, N. Z., from many parts of New Zealand, Australia, British Museum – from photographs and*



*Maori houses and given to his son William Menzies – also lithographed by Messrs Smith and Antony Chch. Three copies were given to the museum Wellington and one to the Christchurch museum.*

No dates appear in connection to the studies and only one study (Menzies 1910a: 14) is annotated with source collections – the “carved boxes” from the “British Museum” and “Wellington Museum” [Museum of New Zealand Te Papa Tongarewa] (Fig. 15). Research has thus far only identified one potential source object, a waka huia (treasure box) in the British Museum collection (Fig. 16) (Starzecka et al. 2010: 45, plate 57). A comparison between this object and Menzies’ painting of it (Fig. 15, top left) reveals his approach as reductionist. His rendering ignores it comprises of two parts – box and lid – and deletes the projecting wheku

heads at each end, reducing it to a pattern contained within a lozenge. This example suggests that Menzies’ approach was to extract the pattern from the object at the expense of other elements, creating a sort of idealised design.

This approach had earlier been used by the missionary Herbert Williams who collected 36 kōwhaiwhai patterns, 29 of which were published in Hamilton (1901) (Neich 1994: 29; Thomas 1995: 106). It is likely this book inspired Menzies to compile the patterns he had collected for publication. Thomas (1995: 106) has observed Williams’ reductionist approach (as opposed to the accurate reproduction of particular heke (rafters) or the whole array in a particular meeting house), regularised the designs and isolated them from their contexts, denying they had cumulative or associative



**Figure 15.** 5 carved boxes reproduced from the volume of original painted pattern studies (Menzies 1910a: 14). Top left is a British Museum wakahuia believed to be based on the wakahuia in Figure 16. Reproduced by permission from private collection.2016.

meanings in their original deployment. This criticism can equally be levelled at Menzies. Indeed the sources for his c. 125 patterns across the 28 studies are not recorded in the publication, nor are regional or iwi (tribal) origins, leaving the patterns totally dissociated from their origin. Neich's conclusion (1994: 32) was that Menzies' contribution to the study of Māori art was limited by his failure to date and record his sources. Like Williams it was an exercise in recording varieties. Menzies indicates little appreciation of individual and regional styles within Māori art, drawing freely from collections across New Zealand and overseas. It is likely he operated on the belief that the patterns in Māori art were effectively pan-tribal, consistent with the anthropology of the day (Meijl 1996: 323).

The publisher's preface to the 1975 facsimile edition stated their research pointed to an initial publication date of 1904, not 1910 as commonly believed. Unfortunately, the evidence for this finding was not presented. Disputing the date raises more than merely an antiquarian question because sitting between 1904 and 1910 are two key events: the St Luke's Church project and the entirely destructive 1907 house fire.

A 1904 publication, perhaps a short run privately financed by Menzies is not unlikely. In the *Press* (1899a) he noted he had collected "at

least sixty" patterns. Furthermore, he went on a holiday to Britain around 1900, an opportunity to see and collect photographs of taonga in the British Museum collection. Publication in 1904 would also mean the work on the painted studies was completed before the 1907 fire, and the bound copy of original studies had already been passed on to his son, hence their survival. There is also a quiet period in his chronology after 1900 prior to commencing work on St Luke's, which could have been filled with painting the studies. If the earlier date is correct, then the production of the pattern studies may have brought a new focus to his carving in St Luke's, favouring the patterns to the exclusion of carved figures. This might be an alternative to the idolatry theory proposed earlier, or at least have been another contributing factor to excluding carved figures. He had also described the "beautiful patterns" as more important than the "strange figures" in his 1899 letter.

Equally, however, newspaper coverage of the 1910 publication (including his own letter) makes no mention of an earlier printing (Anonymous 1910; Menzies 1910b). The earliest date for entries of the publication to Canterbury Museum and the Museum of New Zealand Te Papa Tongarewa is 1910 (H Seumanutafa, Associate Curator, Canterbury Museum pers. comm. 2016; M Lewis, Liaison Librarian, Museum of New Zealand Te Papa



**Figure 16.** Wakahuia (treasure box) from the collection of the British Museum Oc1894,-.272.a. The provenance record notes it was "Bought at Hastings New Z .... Given to Dr Sonnie by Mr Stack 1832." (Starzecka et al. 2010: 45) The source could be James Stack's father. Reproduced by permission, © Trustees of the British Museum.



**Figure 17.** Firewood box with botanical surface embellishment. Private collection. Photograph: D Smith

Tongarewa pers. comm. 2016). The Macmillan Brown Library at the University of Canterbury holds a signed and dated copy from 1910 that originates from the Music and Fine Arts Collection of Canterbury College. The absence of evidence for a 1904 edition suggests the more secure date for first publication is 1910. In turn, this suggests that the painted pattern studies were made in the years 1908–1910, following the completion of the second Menzies Bay

homestead, perhaps a sort of retirement project following his period of carving.

#### **Menzies' furniture and the problem of authentication**

Carved furniture is the most numerous category of Menzies' creative output. Working within the network of the extended family as well as public museums, one descendant has



**Figure 18.** Case with hinged lid, CMA 2003.52.51. Photograph: D Smith



compiled a photo-inventory of all the furniture he could trace, although he believes more pieces are likely to be discovered. At the time of writing, the inventory remains private research; however, the author has had the opportunity to study it. During the years of compilation some furniture has changed hands leading to double entries. Once these were eliminated, a total of 76 pieces were recorded. This excludes the furniture in St Luke’s Church (pulpit, altar, altar rail, lectern, baptismal font) and the honours board carved for Christchurch Boys’ High School, but includes museum pieces. In the process of researching this essay, one new piece was positively identified (a firewood box, Fig. 17) and another identified as highly likely to be by Menzies (a case at Canterbury Museum, Fig. 18), while one thought to be by Menzies was discounted (a tray in the Canterbury Museum collection, Fig. 19).

The inventory can be broken down into the categories presented in Table 1.

There is a wide variety of furniture types and a variety of decorative approaches. Not

all pieces include Māori patterns, some have none at all. Painted Māori patterns do not on the whole appear to be used on the furniture. After Māori patterns, botanical devices are the next most common decoration, and comprise both indigenous and exotic species. Menzies carved botanical reliefs, but also used a form of monochrome surface embellishment where the outline is incised into the wood and a pigment is applied within this outline (see Fig. 17). The inventory includes some pieces carved with fauna (birds). Text in te reo Māori, English and Gaelic is used on some pieces, often in a banner ribbon. The whare whakairo form has already been discussed; another design category includes Menzies clan and Scottish national symbols. A desk with a clan narrative was displayed in Christchurch in 1899, which included a spiral Celtic pattern derived from a photograph of the Crosier of St Fillan (Menzies 1899b). A full review of Menzies’ extant furniture is beyond the scope of this essay. However, with the aim of advancing the authentication of his work, a brief examination

**Table 1.** Breakdown of furniture types for located furniture pieces

Type	Number
Trolleys and canterburys	5 (2 x canterburys)
Trays	7
Side and occasional tables	10
Screens	1
Mirror frames	2
Dinner gongs	2
Dining tables	3
Drop front desks	13 (includes 1 x davenport)
Cupboards	8 (includes 3 x pātaka style)
Cutlery canteens	3
Clock cases	2
Chests/coffers	2
Chairs	2
Stools	2
Bookcases	3
Miscellaneous household items	11



**Figure 19.** Carved tray, CMA 2010.131.1. Photograph: D Smith



**Figure 20.** Inscription, underside of an occasional table, private collection. It reads: "carved by J H Menzies / June 4th 1897 / Menzies Bay". Photograph D Smith

of the furniture in public collections will suffice so as to identify some of his main decorative themes and traits.

*Museum of New Zealand Te Papa Tongarewa:* Pieces excluding Māori carving seen in isolation are not necessarily readily identifiable as Menzies' work. Without a signature or mark,

authenticating a piece of Menzies' furniture is problematic (Fig. 20). Provenance, of course, provides the most secure method of authenticating a piece, and as most furniture appears to have been made for, or inherited by descendants, the source of a piece should be traceable ultimately to a child or grandchild. As the following example indicates, comparison



**Figure 21.** “Maori folk art occasional table”. Museum of New Zealand Te Papa Tongarewa ME 024019. Photograph: D Smith. A, side view of B, detail of table top.

is also a useful method. To this end the descendant’s photo-inventory is valuable. The first-hand study of a variety of Menzies’ furniture reveals consistency in the carved depth of various patterns; much is shallow-gouged to about 1 mm depth. However, this is not absolute, and aberrant examples confuse the issue. It is possible another family member has also carved pieces of furniture. William Menzies, the eldest son to reach adulthood, is known to have carved a series of seven panels with a vine motif and the legend “One Lord, One Faith” for St Saviours Church, Sydenham (Anonymous 1898a). Of course, carvers outside of the Menzies family applied Māori designs to furniture in the late nineteenth and early twentieth centuries (Petersen 2000; Cottrell 2006), and it is possible some even used *Maori Patterns* (1910a) as a source book, which would encourage Menzies-like designs.

The provenance of the occasional table (Fig. 21) in the Te Papa collection has not been traced back to the Menzies family. Its acquisition came about after a New Zealander purchased the table at auction in Sydney on the merit of its carving, and brought it back into the country. The auctioneer (now deceased)

did not give any details of the table’s history to the buyer, and the buyer was not familiar with Menzies’ name or work. He passed the table on to an antique dealer in Wellington who sold it to Te Papa (M Abbot, buyer pers. comm. 2016). At the time of purchase, Te Papa staff were not aware that it was carved by Menzies, and it was recorded as a “Maori folk art occasional table”. The attribution to Menzies was applied only after a descendant saw the table on display and recognised the carving, which bears a close resemblance to a carved trolley that she had inherited (Fig. 22). Te Papa staff visited the descendant’s home to view her furniture, which all has a secure provenance, and thereafter designated the maker of the table as J H Menzies (H P, descendant pers. comm. 2016).

*Canterbury Museum:* Of the tray, case and cutlery canteen attributed to Menzies in the Canterbury Museum collection, only the canteen has a secure provenance. The latter (Fig. 23) has typical Menzies carved patterns, including the centre figure on the upper drawer that can be found in *Maori Patterns* (1910a: 12). The handles for opening the drawers are recesses worked into the carved design. It also



**Figure 22.** Trolley. Note the spiral motif on the wings and the pattern on the table top with reference to the occasional table (Fig. 21). Private collection. Photograph: D Smith **A**, side view. **B**, view of trolley table top with wings opened.

has the Menzies' pattern-cut carry handle, an upward curving void with rounded ends, seen in the top rail and the central partition inside each drawer.

The tray (Fig. 19) was purchased from a Christchurch dealer without provenance. Although displaying Menzies-like carving around the sides, it has an aberrant form of cut-out handle, which curves downwards into sharp points. The carved figures can also be questioned. The tongues on Menzies' figures are always stylised, terminating in sharp points, whereas the tongues here, although elongated, have naturalistic curves with a rounded end. Furthermore, of the seven trays recorded in the descendant's photo-inventory, all are decorated on the tray top, whereas the tray top on this example is left plain. Although the four ends of the rails that run under the tray are initialled, these are rather illegible. At least one might be construed as reading "JHM", but they could equally be other initials. Known examples where Menzies has signed a work are either on the underside (Fig. 20) or worked into a pattern in a single place. Currently there are no authenticated examples where he has placed his initials in multiple places. On balance the

attribution of this tray to Menzies is probably incorrect.

The carved case, a wide shallow box with a hinged lid (Fig. 18), on the other hand, although also currently without provenance, is very likely to be a Menzies piece. Not only are the carved patterns recognisable in other authenticated pieces of Menzies' carving, the lid is carved in a version of the cover of *Maori Patterns*, leading to the speculation that the function of the case was to house the book. The carved area of the lid is larger than the book cover and has no text. The additional surface area is filled with an elaboration of the patterns on the cover, and a figure that Menzies commonly used. An alternative speculation is that the cover of the book was based on this lid design and the case perhaps functioned as a cutlery canteen, the interior now missing its partitions. The integration of a key hole in the central figure at the front of the box is typical of other examples of Menzies' furniture.

*Akaroa Museum:* Akaroa Museum on Banks Peninsula has two provenanced examples of Menzies' furniture, a cutlery canteen and a drop-front desk. The canteen (Fig. 24), with its





**Figure 23.** Cutlery canteen, CMA 2008.61.1. Photograph D Smith

two drawers and top rail, has an identical form to the Canterbury Museum piece (Fig. 23). It also has the pattern-cut handles on the top rail and in the drawer partitions. Once again, handles to pull the drawers open are integrated into the carved design. Although faded, the top of the canteen cabinet appears to have once been decorated with a *kōwhaiwhai* design picked out in a pigment. It is unusual to see pigmented Māori patterns on Menzies' furniture, although

pigmented botanical designs are a significant subgroup of his furniture decoration, such as the wood box (Fig. 17).

The drop-front desk (Fig. 25) is a late piece, apparently made about 1918 and gifted to Reverend Henry A Wilkinson on his transfer away from the Okains Bay vicarage or Banks Peninsula East Parish (Akaroa Museum date unknown). The desk decoration is reminiscent of the pulpit at St Luke's church. The lid has a



**Figure 24.** Cutlery canteen, Akaroa Museum accession number AK:2013.15.1. Photograph D Smith





**Figure 25.** Drop-front desk, Akaroa Museum temporary identification number AK:INV:361. Photograph D Smith

deep relief of *Clematis* although its execution is laboured. A separate piece carved as a *Clematis* flower was added to the desk lid in a clumsy manner and is heavy. Lighter relief panels of Mount Cook lilies on the two cupboard doors are indistinct. Menzies suffered a stroke about 1915 (Menzies 1970: 26), which may have impaired his ability to complete this late work satisfactorily.

*Variability in quality:* Generally, across the corpus there are some pieces that are less well executed than others. While some pieces exhibit flowing pattern combinations with careful detail and accurate cutting and chiselling, other pieces appear heavy handed, and are altogether less successful.

This variability is not easily explained, especially given the difficulty in establishing a chronology of his works. However, research indicates that furniture associated with the second Menzies Bay homestead, is on the whole, less well executed. It is tentatively suggested that there was a decline in the quality of his carving after St Luke's Church was completed.

The furniture for the second Menzies Bay homestead may have been rushed, and perhaps there was an element of creative exhaustion after the execution of St Luke's. In addition, his wife Frances was ailing at this time, and may not have lived to see the replacement house completed, perhaps affecting his commitment to the project (Menzies 1970). Menzies retired to Christchurch soon after Frances died and, as asserted above, *Maori Patterns* might be seen as the bookend to his carving career.

While the problem of authentication will remain for unprovenanced furniture, establishing a secure attribution in future institutional collecting would be aided by collegial consultation between institutions. In particular, Akaroa Museum has developed a collection of resources, including photographic, which will greatly aid attribution by comparison.

### **Conclusion**

The Arts and Crafts movement casts a long shadow over the period of Menzies' artistic

activity. Menzies should be identified for his contribution to finding a New Zealand expression of this movement; he should also be regarded as an originator in his own right. The whare whakairo style was one of his innovations, an approach that can be identified in his furniture and in the architecture and decoration of Rehutai. Even at St Luke's Church, where Arts and Crafts is most purely expressed by Menzies, his reference to Māori art in its decoration combined with other motifs shows a unique and highly-developed decorative vocabulary.

Menzies' practice owed much to his research into Māori carving and painting, and his endeavour to reproduce the patterns accurately, even if they were deployed according to his own taste. His understanding of Māori art can be linked to the ethnology of several Canterbury men, while the carvings at Canterbury Museum were an early source for study. Indeed, Menzies' art should be seen as created in dialogue with the anthropology of his day; it also addressed personal and wider societal questions regarding national identity, particularly around the place of the indigenous in national life. Looking across his varied creative output there is a unity brought by the themes he addresses, chief of these, as *Maori Patterns* suggests, was his belief in the importance of Māori art to national identity; a belief that that past was relevant to his present. As art historical art documents, his work might be compared with contemporary Māori history and portrait paintings by Gottfried Lindauer and Charles Goldie, which were also informed by anthropology (Bell 1992). However, unlike these artists, Menzies was not working to please a patron. Farming provided him a secure income and, as time progressed at Menzies Bay, he would have been increasingly able to step back from day-to-day running of the farm by employing labourers and handing more responsibilities to his sons. This gave him leisure time as well as the finances for his creative pursuits.

The isolated locations of his buildings, along with the fact that much of his furniture remains

in private ownership, have not helped Menzies in becoming better recognised nationally. At the time of his death even his obituarist seemed largely oblivious to the extent of Menzies' creative endeavours. After acknowledging his work on St Luke's the writer noted that:

*Mr Menzies made a great hobby of Maori carving, and collected a vast number of patterns of native art, being, in fact, somewhat of an expert on it. His house at Menzies' Bay was full of his work, and it was unfortunate that it was destroyed by fire (Anonymous 1919).*

Since then, and in spite of the listing of his buildings and collection of his furniture by public museums, Menzies has remained a peripheral figure in our art history. Petersen (2000: 63) has complained:

*in New Zealand's standard architectural and furniture histories [a] trivialisation of the decorative arts and neglect of non-architecturally designed domestic interiors have played a part in leading art historians to underestimate the significance of early Pakeha use of Maori art in their homes.*

Given the prominence of Māori art in Menzies' practice, Petersen's comments are certainly apt. However, now his work is visible in the public realm, a thorough reappraisal is timely, one that moves beyond his definition as a hobbyist to a more critical appreciation of Menzies as an accomplished and passionate artist-craftsman.

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## An artist's collection – a partial catalogue of Sydney Lough Thompson's collection at Canterbury Museum

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This paper will explore the personal collection of Sydney Lough Thompson, an internationally successful artist originally from Canterbury who spent much of his career overseas. In 1968 and 1969, Thompson gifted a number of kākahu (cloaks) and other taonga to Canterbury Museum. Thompson had received these taonga in recognition of his portraits of Ngāti Tūwharetoa who he had painted in the early twentieth century. This paper is a catalogue of these four kākahu and an overview of his life story.

**Keywords:** Cloaks, collecting, collector's collections, kākahu, material culture, textiles, weaving.

### Introduction

Canterbury Museum is home to the personal collection of significant Canterbury artist Sydney Lough Thompson. This private collection of taonga Māori and Pacific objects was gifted to the Museum by Thompson in the late 1960s. This paper will describe the objects that he gifted, with a specific focus on four kākahu (cloaks), which were gifted to him in recognition of his artistic works. It will look at how they were made and discuss what is known of their provenance and materials. It will consider the collection items as personal objects that had intimate connections to the artist, so intimate that one cloak appeared in a portrait of his family.

### Sydney Lough Thompson

Sydney Lough Thompson was one of New Zealand's best known artists during the 1920s. While he spent much of his career in France, he returned to New Zealand often and exhibited widely in his homeland. His biographer, Julie King, notes that in "the early 1920s, he was easily New Zealand's most celebrated painter. Thompson became a model of the professional artist who had achieved expatriate success"

(King 1990: 69). It was noted by Australian critic William Moore that Thompson's work was known by the public as well as the art world and in 1923, when Thompson returned to New Zealand to exhibit, a civic reception was held in his honour (King 1990).

Thompson was born in 1877, in Oxford, Canterbury. His parents owned a general store and later a sheep run. His early training and work were influenced by Petrus van der Velden, a Dutch artist who settled in New Zealand and was known for his majestic landscape paintings of the West Coast of the South Island. In 1895, at the age of 18, Thompson began his studies at the Canterbury College School of Art. At the same time, Thompson took private lessons with van der Velden. Thompson's talents were quickly recognised by the School and he received a scholarship in 1896. He went on to receive a silver medal from the British Department of Science and Art, at that time the highest award gained by an art student in New Zealand, for his still life of a saddle (King 1990).

Like many artists of his generation, Thompson went to Europe to further his studies. He lived and studied in London, Yorkshire and Paris.

In France he spent time at the artists' colony at Concarneau in Brittany, a place that would later become his home and the regular subject of his paintings. While in Europe he exhibited at the Royal Academy of Arts in London and at the Paris Salon of the Société des Artistes Français (King 1990). While studying in Paris, he was influenced by the work of Édouard Manet, Claude Monet, Camille Pissarro, Alfred Sisley and Edgar Degas (Robert McDougall Art Gallery 1976).

Thompson returned to New Zealand in 1905 and became Life Master at the Canterbury School of Art from 1906 to 1910. He was also on the council of the Canterbury Society of Arts from 1905 to 1911. He exhibited in New Zealand during this time and became well known as a portraitist, painting prominent Canterbury families. One of his most charming portraits is of the three daughters of Robert McDougall, a successful Christchurch businessman and arts patron, painted in 1910 (King 1990).

But it was not just members of the local Pākehā elite who sat for Thompson. During the summers of 1906 to 1910, Thompson travelled the North Island and stayed at Tokaanu, on Lake Taupō, painting portraits of local Māori (King 1990). He became friends with the Te Heuheu family (Ngāti Tūwharetoa) and found sitters through this friendship. Returning each summer, he became well known to local iwi and was known as Tāmehana, a transliteration of Thompson (King 1990). According to the 1968 Canterbury Museum annual report, "Because the young Christchurch artist declined to accept any payment for portraits of the local elders he was immediately recognised as a rangitira [sic] and so treated." This included gifting Thompson taonga: between 1907 and 1910, he was presented with four kākahu or cloaks (Canterbury Museum 1968). According to Museum records, three were especially made for his future wife Maude and were delivered to his home in Canterbury, while the other was an older example (King 1990). These kākahu were later gifted to Canterbury Museum and are the subject of this paper.

Thompson married Maude Ethel Coe in 1911 and the couple left for Europe. After a brief stay in England, they settled in France. Thompson studied with Lucien Simon in Paris and attended classes at Académie Colarossi (where another New Zealand artist, Frances Hodgkins, taught watercolour) (Gill 1993) and the École nationale supérieure des Beaux-Arts (the French national school of fine arts) (King 1990). His work was influenced by Simon, employing his "vigorous drawing and courageous colour" (Robert McDougall Art Gallery 1976). When he and Maude settled in Concarneau, Brittany, where he had previously spent time, Thompson's work became focused on capturing the colour and movement of the port and seascapes in an impressionistic manner (Robert McDougall Art Gallery 1976).

Thompson and his growing family – a son and two daughters – remained in France during the First World War, returning to New Zealand in 1923. Thompson had been exhibiting in Europe and he continued to show in New Zealand (King 1990). The family returned to France in 1925, but the shifting politics of Europe meant the family again returned to New Zealand in 1933, settling in Canterbury. That year, he resumed his involvement with the Canterbury Society of Arts, becoming the President, as well as the Vice President of the New Zealand Society of Artists. He was also a member of the Committee of Management of the National Art Gallery (Wellington) and was involved with Christchurch City Council's Art Gallery Committee. He was awarded an MBE in 1937 and continued to lecture, exhibit and paint until his death – his last work was completed shortly before his 90<sup>th</sup> birthday. He continued to live in both France and New Zealand, passing away in Concarneau on 8 June 1973 (King 1990). Despite spending much of his career in France, he considered himself a New Zealand artist (Keen 1991).

Thompson's work can be found in all New Zealand metropolitan galleries and in several major Australian galleries. There have been two survey exhibitions of his work at the

Christchurch Art Gallery, in 1976 and 1990 (Robert McDougall Art Gallery 1976). The 1990 show, *Sydney Lough Thompson – at home and abroad*, included a catalogue of 70 paintings by Thompson. King's biography of Thompson was published in 1990 to coincide with the exhibition and a smaller version of the exhibition toured New Zealand in 1991 and 1992 (Christchurch Art Gallery 2017). As recently as 2017, a local art gallery in Concarneau (Galerie Gloux) was exhibiting Thompson's work, in an exhibition entitled *Peintre voyageur, Retour à Concarneau*, which translates as "Painter traveller, returns to Concarneau" (Galerie Gloux 2016).

### **Thompson's collection at Canterbury Museum**

In 1968 and 1969, Sydney Lough Thompson gifted a number of objects to Canterbury Museum. The gift included four kākahu, a number of taonga Māori, several objects from Fiji and one of his paintings - a portrait of a Māori chief in a korowai (cloak) holding a pounamu (greenstone) mere (Canterbury Museum accessions register, 80/68).

The Canterbury Museum accession register records the gift as: 80/68 "Part of a group acquisition. Collection of Maori artefacts given to donor by Lake Taupo Maoris, over period 1905–1910: Carved canoe bailer of early vintage; early Kaitaka cloak; 3 Korowai cloaks specially made for donor; Taniko border sample; whale bone patu; 4 greywacke and one nephrite adzes (Taupo); 1 argillite adze, Oxford District; wooden comb and fork, Fiji. Oil portrait of Taupo chief, with portrait face tattoo, painted in 1906–7." (Canterbury Museum accessions register).

This additional object, which came to the Museum in 1969, is described in the Ethnology register as "Cloak of cabbage tree, the broad leafed, cordyline indivisa [sic], toi, made by working loops of tufts in alternate rows of weft" and "closer inspection shows weft of flax" (Canterbury Museum Ethnology register, E169.473). It is a paki or rain cape.

The 1968 gift was significant enough to be highlighted in the Museum's annual report of that year. The statement included is unusually long and gives us a considerable amount of information about the collection:

*A superbly carved canoe bailer, a tribal heirloom, possibly 100 years old when obtained by the donor from the Maoris of Lake Taupo in 1910, is an outstanding item of a collection presented by the well-known New Zealand artist, 91-year-old Mr Sydney Thompson of Christchurch. Mr Thompson found himself concerned at the continuing loss of Maori artefacts which continue to leave the country despite the prohibition of the Historic Articles Act, and decided to present the bailer and other artefacts with the stipulation that they never leave the custody of the Canterbury Museum. The collection also includes an early vintage man's dress cloak with a taniko border, three women's korowai cloaks specially made during the years 1907–1910 by surviving weaving experts, and a whalebone patu. Mr Thompson also presented a portrait of an unnamed Taupo chief, with part tattoo, painted by him in 1906–1907. The donor's contacts with the Lake Taupo Maoris date to annual summer vacation painting over the years 1905–1910. Because the young Christchurch artist declined to accept any payment for portraits of the local elders he was immediately recognised as a rangitira and so treated. While the bailer, bordered cloaks, and the whalebone patu were already old when given to him, the three specially made korowai cloaks took three years in the making (Canterbury Museum 1968).*

### **Early Māori paintings**

Thompson showed an interest in painting Māori subjects early in his career, from 1898 to around 1910. It is difficult to know how many paintings of Māori subjects Thompson made, as few have known locations or exist in public collections.

Only five of these works have been identified or publicly exhibited: *Maori Mother and Child*, 1898 (Christchurch Art Gallery); *Untitled*

(*Portrait of a Maori*), 1907 (location unknown); *Portrait: Taupo Maori Chief with Mere*, 1907 (Canterbury Museum) (Fig. 1); *A Maori Belle*,



**Figure 1.** *Portrait: Taupo Maori Chief with Mere* Sydney Lough Thompson 1907. Canterbury Museum Ethnology register, E168.538.



1908 (location unknown) and *Aged Warrior*, 1910 (location unknown). It is likely that others are in family collections or displayed on marae as

portraits of respected tupuna (King 1990).

In 1898, he painted *Maori Mother and Child*, which is now in the collection of the



**Figure 2.** *Maori Mother and Child* Sydney Lough Thompson 1898. Oil on canvas, 770 x 615 mm. Collection of Christchurch Art Gallery Te Puna o Waiwhetu. Presented by R E McDougall, 1932.



Christchurch Art Gallery (Fig. 2). This is well before his recorded painting trips to the central North Island, so is likely influenced by the work of other painters, such as Gottfried Lindauer, who were painting Māori subjects from the 1870s. Indeed, this work appears to be influenced by Lindauer's 1878 painting *Heeni Hirini and child*, until recently called *Ana Rupene and child* (Borell 2017; Mason 2017). Lindauer's original work shows a Māori woman with moko kauae (tattoo of the lips and chin) carrying a child wrapped in a cloak on her back. While the woman and child in Thompson's work have quite different faces and expressions to the Lindauer work, there are similarities in the pose and the cloaks worn by the two women – both are mixed kākahu, edged in feathers, with black corded hukahuka and red feathers. Both women wear moko kauae and a pounamu (greenstone) ear pendant. It is not surprising that Thompson was influenced by such a popular work. The subject of a mother and child was a universal and sentimental favourite and Lindauer painted over 30 versions of this painting in his lifetime (Borell 2017; Mason 2017).

From 1906 to 1910, Thompson spent his summers in the central North Island, painting portraits of local Māori. In 1968, he gifted one of these works to Canterbury Museum. Little is known about this work, other than that it was painted in the summer of 1906–1907 and according to documentation from the time of acquisition, the sitter is an unnamed chief from Taupō. King notes that the work is “an intense realization of the man's powerful presence, painted in a style derived from northern realist tradition” and showing the influence of his training with van der Velden (King 1990).

While Thompson continued to paint portraits throughout his career, his style changed from the ‘realist tradition’ noted above to a more impressionistic style. Much of his later work depicted landscapes and seascapes (King 1990).

### **The story behind the kākahu**

The 1968 Canterbury Museum annual report notes that Thompson was presented with four

cloaks, a canoe bailer and a whalebone patu (club) in recognition of his artistic skills and talents by the people of Ngāti Tūwharetoa. While we do not know exactly who gifted these taonga to Thompson, the provenance of another cloak owned by Thompson gives us some clues.

In 2003, Thompson's daughter Annette returned a kahu kiwi (a kiwi-feather cloak) to Ngāti Tūwharetoa. When her father gifted his other taonga to Canterbury Museum in 1968, Annette had asked to keep the cloak because of her strong attachment to the taonga. When it was time to pass it on, she decided to return it to the people who had made it. The cloak was accepted by Rangiiira Hedley on behalf of the iwi (Trevett 2003). An article in the *New Zealand Herald* from 2003 notes that the kahu kiwi was originally gifted by Hepi Kahotea Te Heuheu, son of Tureiti Te Heuheu Tukino V. Te Heuheu Tukino V was the paramount chief of Ngāti Tūwharetoa. His son Hepi was destined to follow in his father's footsteps but died of influenza in 1918 (Trevett 2003; Gartner 1996). The kahu kiwi featured kiwi and kererū feathers and symbolised the protection and affection of the Te Heuheu family (Trevett 2003).

### **Four kākahu (cloaks)**

The next section looks more closely at the four kākahu that were gifted to Thompson in the 1900s and which were, in turn, gifted to Canterbury Museum in 1968. This section includes a master weaver's comments about the kākahu, the materials used to make them and how they were made. This updates the information previously held about the kākahu and recognises the skills of the women who made them.

There are four kākahu or cloaks in the Sydney Lough Thompson collection at Canterbury Museum. Three of the kākahu were originally described at the time of acquisition as korowai, which means they are adorned with hukahuka or kārure (rolled or twisted threads of muka, flax fibre). However, only one would now be described as a korowai, with the other two now being described as kahu kiwi – kiwi feather

cloaks. The final kākahu is a kaitaka, made of fine muka and bordered with tāniko (finger weaving) (Pendergrast 1987).

I gratefully acknowledge the knowledge of master weaver Ranui Ngarimu and expertise of Canterbury Museum Senior Curator Roger Fyfe in identifying and describing these taonga. Future conversations with the Te Heuheu family and Ngāti Tūwharetoa weavers may reveal more about these kākahu.

The first kākahu (Fig. 3) is described in the Canterbury Museum Ethnology register as “Cloak, kaitaka, small, with simple coloured textile decorations worked across on the weft and visible only on the outside. Taniko borders of intricate designs and limited colour range are wide across the bottom and narrow across the sides. The top of the cloak is damaged – frayed out where the ties and some of the decorative textile has come

completely detached. This cloak is early, TAUPO.” Its catalogue number is E168.528, indicating that it is part of the Ethnology collection and was the 528<sup>th</sup> object catalogued into that collection in 1968 (Canterbury Museum Ethnology register).

Ngāi Tahu master weaver Ranui Ngarimu describes this kaitaka as a “stunning piece of work ... [with] exquisite tāniko ... a chiefly garment” (Ngarimu pers. comm. March 2017). She notes that the kaitaka has been worn: there are signs of wear at the hip, where the garment would have rubbed against the wearer's body. There are also signs that the whenu (warp) has come away where ties would have been at the top of the kaitaka. The aho (weft) is very fine, precise and consistent, indicating a very skilled weaver. The kaitaka has puka (shaping), which means that it has been made to be worn. The whenu tāpuri (finished edges) elements are also beautifully and



Figure 3. Kaitaka. Canterbury Museum Ethnology register, E168.528.



**Figure 4.** Annette Thompson stands in front of her father's painting, *In my studio at Kerizett, Concarneau, Annette, Yan and Mary* in 1991. Fairfax Media NZ, *Press*.

tidily woven (Ngarimu pers. comm. March 2017). Tellingly, there are paint stains at the edges of the cloak, suggesting that Thompson kept it near him when he was painting. This is the cloak described as an “early vintage man’s dress cloak with a *taniko* border” in the Canterbury Museum annual report of 1968.

The paint splatters evident on the edges of the kaitaka are not surprising when you learn that Thompson kept this object close to hand. In a painting from 1929, the taonga he was gifted about 20 years before can be seen (Fig. 4). *In my studio at Kerizett, Concarneau, Annette, Yan and Mary* (1929) shows his children at home in Concarneau, Brittany. The *tāniko* bordered kaitaka is visible in the corner of the painting above the piano, draped over a framed painting (King 1990). It seems that Thompson treasured his gift from the Ngāti Tūwharetoa people and took it with him when he settled in France.

The second *kākahu* (Fig. 5), a *kahu kiwi*, is described in the Ethnology register as “Cloak, feather bordered and feather decorated. Border kiwi and kaka feather, decorations kiwi and other

bird feather sparsely [sic] spaced instead of flax thrums. Made especially for donor’s wife by the Taupo Maori ladies. This cloak has blue and natural textile decorated borders top and bottom and a thin yellow border on the sides. At the two top corners many threads have been left loose & long. TAUPO.” Its catalogue number is E168.529 (Canterbury Museum Ethnology register).

Ngarimu (pers. comm. March 2017) notes that this is a wide garment, carefully shaped for wear, but was perhaps designed to be worn across the body (under the arm and across the opposite shoulder), rather than around the shoulders. There is some wear and loss of feathers that would indicate this use (Ngarimu pers. comm. March 2017). She also notes the unusual purple alternating chain stitch at the bottom of this *kahu kiwi*. Roger Fyfe suggested this purple colour may have come from crushed indelible pencil lead (Fyfe pers. comm. April 2016). This *kākahu* also has some splatters of paint. All four borders have kiwi feathers with *kākā* underwing feathers. There are also domestic fowl feathers in diagonal rows, alternately and irregularly paired with kiwi





**Figure 5.** Kahu kiwi. Canterbury Museum Ethnology register, E168.529.

feathers (Fyfe pers. comm. April 2016).

The third kākahu (Fig. 6) is described in the Ethnology register as “Cloak, korowai, with feathers. Kiwi feather borders wide on sides and narrow on bottom. Row of thrums on the top. Thrums and kaka feathers sparcely [sic] spaced for decoration. Some thrums are gone. Yellow and black textile decorations on sides and bottom. Made specially for donor’s wife by the Taupo Maori ladies. TAUPO.” Its catalogue number is E168.530 (Canterbury Museum Ethnology register).

This cloak is a kahu kiwi, featuring both hukahuka (often called thrums) and kiwi and kea (not kākā) underwing feathers (Ngarimu pers. comm. March 2017). Further investigation of this cloak reveals that there is no sign of wear or collar

ties, suggesting that it was only ever displayed, not worn. The body of the cloak has a pattern of alternating diagonal rows of black hukahuka and kea underwing feathers (Fyfe pers. comm. April 2016). The hukahuka were beautifully made but have broken off over time, either through wear (which is not so likely) or because of the dyes reacting with the fibre. This kākahu has some anomalies: Ngarimu wondered if the cloak had been trimmed, as the finish was not as perfect as that of the other kākahu (Ngarimu pers. comm. March 2017).

The fourth kākahu (Fig. 7) is described in the Ethnology register as “Cloak, korowai, small, with dense thrums on the top & other thrums sparcely [sic] spaced elsewhere. Has black and natural textile decorations all round, wider at the bottom.



**Figure 6.** Kahu kiwi. Canterbury Museum Ethnology register, E168.530.

Made specially for donor's wife by the Taupo Maori ladies. TAUPO." Its catalogue number is E168.531 (Canterbury Museum Ethnology register).

This cloak is a korowai, featuring kārure (twisted cords or tassels). This cloak is made from the finest muka. Ngarimu (pers. comm. March 2017) describes this is a "treasure ... amazing". This korowai has not been worn: there is no indication of ties or wear. The kārure would have sprung upwards towards the wearer's neck but have fallen downwards over time. Ngarimu (pers. comm. March 2017) notes that these are not true kārure: they are made with two strands, rather than the usual three. They have been coloured with paru dye, a black dye derived from mud, which is highly acidic (Wallace 2011). This garment has been made for a woman, evident by

its small size, which matches with the information given at the time of acquisition.

Ngarimu (pers. comm. March 2017) suggests that three of the cloaks were made by the same weaver, or group of weavers, due to the consistency of style and patterns. The korowai and kahu kiwi have been described in the Museum Ethnology register as being made especially for Thompson's wife Maude, although only one seems to be of a smaller, woman's size. The Museum's annual report also notes that these kākahu were delivered to Thompson's home in Christchurch after 3 years of work, a sign of the time required to make such fine pieces (Canterbury Museum 1968).

Sydney Lough Thompson was gifted precious taonga as a sign of the esteem in which he was held by the people of Ngāti Tūwharetoa due to his artistic talents and commitment to returning





Figure 7. Korowai. Canterbury Museum Ethnology register, E168.531.

to the area to paint its people. Thompson's respect and admiration for the people he knew and painted is reflected in the care he took of the taonga that were gifted to him. The kākahu travelled with him around the world, even appearing in a painting of his children. He chose to gift the taonga to Canterbury Museum before his death because he wanted the taonga to remain in his home region.

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## Music in honour of a First World War soldier: *Life* by Arthur Lilly

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Arthur Lilly's large-scale choral work, *Life*, drew inspiration from his brother Leslie's military service. Largely written in 1915 and first performed in 1930, *Life* portrays regret over a lost innocence, but it also expresses hope for the future. These themes are drawn from William Wordsworth's poem 'Ode: Intimations of Immortality from Early Recollections of Childhood', the poem Arthur used as the basis for his work. Although *Life*, as a very early New Zealand work, does not convey a recognisable New Zealand stylistic voice, it nevertheless provides a glimpse into New Zealand's cultural and civilian reaction to the First World War.

**Keywords:** Arthur Lilly, choral music, First World War, New Zealand music, orchestral music, William Wordsworth

### Introduction: Music inspired by a brother's military service

Lieutenant Leslie Gordon Lilly was one of millions of soldiers fighting in the Great War, now known as the First World War. The official record on his service is sparse and the family history does not add additional information about his wartime experience. Nevertheless, his contribution had a significance beyond the trenches. Indeed, Leslie's military service inspired his older brother Arthur to write *Life*, a choral work in his honour. Written in a late Romantic style, *Life*, a musical setting of William Wordsworth's 'Ode: Intimation of Immortality from Early Recollections of Childhood' explores Wordsworth's themes of lost innocence and childhood and relates it to his own life.

Largely written in 1915 and first performed in 1930, *Life* exemplifies part of New Zealand's artistic reaction to the First World War and its aftermath. While the work was largely inspired by Leslie's military service, the music is also coloured by Arthur's personal experiences. He drew upon his own childhood memories as

inspiration and included a chorus in memory of his eldest son, Frank, who died in 1919 at the age of five (*Press*, 3 September, 1930: 8; Lilly date unknown). As Hunter and Ross (2015) point out, it is the experiences of those in uniform that have dominated our collective memory of the war. Although these experiences are important, their prominence has caused gaps elsewhere. More focus on the connections between the battle fronts and home, and on the civilian experience is needed (Hunter and Ross 2015).

The music exudes late Romanticism. Stylistically, it draws on the English choral tradition, and is also heavily influenced by the work of Richard Wagner (1813–1883), the German operatic composer whose rich chromatic harmony and system of 'leitmotifs' influenced musicians across Europe (Whittall date unknown). While Wagner used leitmotifs both to symbolise operatic characters such as Tristan and themes such as fate or love, Lilly uses them only thematically. As with the musical

style, the text also draws from Romanticism. Given that the music is dedicated to a First World War soldier and is a setting of an English poem, *Life* could easily be a work from another part of the English-speaking world. This universality is perhaps unsurprising as Arthur trained in England (*Nelson Evening Mail*, 5 September, 1959: 10). Palenski (2012) argues that New Zealand's national identity was formed in the latter third of the nineteenth century, but notes that this sense of identity was not without conundrums. Furthermore, it took some time for this identity to be expressed in artistic works. In the field of music, it was not until the 1940s that a more deliberate search for a New Zealand 'tradition' was consciously embarked upon (see Lilburn 1984)<sup>1</sup>. Yet, while there is nothing recognisably New Zealand about *Life*, it nonetheless sheds light on New Zealand's reaction to the First World War. *Life* resonates with feelings of regret over a lost innocence, but there is also a thread of hope for the future embedded in the work.

### The Lilly Brothers

Born on 9 January 1882, Arthur Lilly was the 10<sup>th</sup> child of Alfred Lilly and Frances Jane Taylor (*Nelson Evening Mail*, 5 September, 1959: 10; Divehall date unknown; Divehall 2017). The couple had 13 children, with the youngest, Leslie, being born on 26 August 1887 (Divehall date unknown; Divehall 2017). Alfred was a blacksmith and engineer by trade, but is also remembered as a church chorister. His musical talents seemed to have been passed down to at least two of his sons, his eldest son Alfred William and Arthur. Fourteen years older than Arthur, Alfred William was already working as an organist at St Matthew's Anglican Church in Dunedin when Arthur was still a small boy, and arranged for Arthur to go to the church early in the mornings to practise the organ (*Press*, 14 June, 1913: 12; *Nelson Evening Mail*, 5 September, 1959: 10; Divehall 2017). Other than this reference to the young Arthur's interest in music, sources are silent on his training and

early interests until his departure for England at the age of 21.

With the aim of furthering his training as an organist, Arthur took on work as a carpenter's mate on a ship bound for the United Kingdom in 1903. Once he arrived in London, Arthur studied for 3 years at the Royal College of Organists under Sir Frederick Bridge, who was the organist at Westminster Abbey (Warrack and Kent date unknown; *Nelson Evening Mail*, 5 September, 1959: 10). Returning to New Zealand in 1906, he was appointed as assistant to John Christopher Bradshaw at Christchurch Cathedral (*Nelson Evening Mail*, 5 September, 1959: 10). Arthur was subsequently employed at several Christchurch churches as organist and choirmaster (*Press*, 1 June, 1914: 8, 5 April, 1934: 15). Reflecting on his long career in 1959, Arthur told the *Nelson Evening Mail* he did not really like modern music. This seems to have applied both to popular styles and to modernism in art music. When asked about his musical tastes, Lilly replied, "Personally, I enjoy a bit of jazz, but I don't know about rock 'n' roll, and I'm too old to get acquainted with it now." (*Nelson Evening Mail*, 5 September, 1959: 10). He also believed that Modern Classical music (referring to the 20<sup>th</sup>-century avant-garde movement) had "difficulty in creating melody and [was] handicapped by the absence of it" (*Nelson Evening Mail*, 5 September, 1959: 10). Baroque composer Johann Sebastian Bach, on the other hand, remained a lifelong favourite (*Nelson Evening Mail*, 5 September, 1959: 10).

Of all his siblings, Arthur appears to have been closest to his youngest brother, Leslie. Leslie was the best man at Arthur's wedding in 1912 (Divehall 2017). When Leslie moved to England in March 1913 to further his career, the two brothers stayed in contact, with Arthur updating the newspapers as to his brother's whereabouts. Leslie took up a position with London-based silk merchants Messrs Smith and Lister and in 1914 his work took him to North America. After concluding his business, Leslie planned to return to England aboard the *Empress of Ireland* and wrote to Arthur about



his travel plans. En route to England, the ship sank in the St Lawrence River after colliding with the Norwegian collier *Storstad* in dense fog on 29 May. There were 465 survivors but over 1,000 people lost their lives (Marsh 2007). After hearing the news, a fretful Arthur told New Zealand newspapers that his brother may have been on board the Canadian Pacific passenger ship. The *Auckland Star* (1 June, 1914: 6) reported that in his last letter to Arthur, Leslie mentioned that he had bought a ticket for the ill-fated ship. Arthur's worry is palpable: "No cable message was received by him", but the article concludes with the hopeful statement "it is not known whether he was actually a passenger by her" (*Press*, 1 June, 1914: 8). Fortunately, Leslie had in fact missed the boat as he was delayed by work obligations (*Ashburton Guardian*, 2 June 1914: 5; *Press*, 1 June 1914: 8). The *Press* announced Leslie's safety, citing the much hoped-for cable mentioned in the *Auckland Star* (1 June 1914: 6). It may well have been this event that led Arthur to the themes of loss and hope embedded in the leitmotifs in *Life*.

The newspaper articles demonstrate that the brothers stayed in contact and that Arthur felt it was important to update New Zealanders about Leslie. Leslie continued to work for the silk merchants until the autumn of 1915 when he enlisted with the British Army (*Star*, 13 November, 1915: 4; Army Medal Office, Army List 1916). His enlistment was publicised in the Christchurch newspaper the *Star* and Arthur is the only family member mentioned in the notice. (*Star*, 13 November, 1915: 4). Leslie's wedding announcement the following year mentions his parents, as is customary, but again Arthur is the only sibling mentioned (*Sun*, 19 February, 1916: 6). Finally, in 1921 the *Press* reported that after 9 years abroad, Leslie was returning to New Zealand. The *Press*' source is once again a cable sent to Arthur Lilly (*Press*, 4 November, 1921: 8). It appears Arthur felt the need to demonstrate publicly his devotion to his younger brother.

It was during the First World War that Arthur first conceived of another way to demonstrate that devotion: he began writing *Life* in 1915 to

honour Leslie's military service. Very little is known about Leslie's military experiences. As a New Zealander, he was permitted to enlist in the British military<sup>2</sup>. He joined the 1<sup>st</sup> battalion 2<sup>nd</sup> County of London Yeomanry (Westminster Dragoons), serving in Egypt (Army Medal Office, Army List 1916). The Westminster Dragoons were at Gallipoli, but it is unknown if Leslie was among the reinforcements (Huw-Williams 1987). He applied for a 1915 Star, a British War medal and Victory medal but was not awarded the 1915 Star (Army Medal Office). According to family history, he also served in Palestine and Syria, but no further details of his service were passed down (Divehall date unknown). Although the official record is sparse, Arthur nonetheless found his brother's military service inspiring.

### Exploring the music

As a text for his musical tribute to his brother, Arthur chose Wordsworth's 'Ode: Intimations of Immortality from Recollections of Early Childhood'. The poem was first published in Wordsworth's 1807 book *Poems: In Two Volumes* (Worthen 2014). For Wordsworth, 'Ode' represented a reflection on loss and a hoped-for renewal (Butler 2003). The poem's protagonist laments losing touch with nature as an inevitable aspect of aging. Growing up, argues Wordsworth scholar Paul Hamilton, has meant a growth in self-consciousness and it is the increased self-consciousness that blocks the protagonist's ability to connect with the broader world (Hamilton 2003). Although Arthur did not leave an explanation as to why he chose Wordsworth's poem as the basis for *Life* (Canterbury Museum accession number (CMA) 1996.204.1), he did note that he drew from his own boyhood experience in Otago while composing the work (*Press*, 3 September, 1930: 8). This suggests he related to the poem's idea, and the general romantic notion, that children are often closer than adults to nature.

As if to evoke the spontaneity of childhood, the poem darts around thematically, freely jumping



from one topic to the next. The rhyme scheme and meter also shift frequently, producing a lilting, song-like cadence. Despite the metrical interest in the text, the vocal setting is largely syllabic and does not mirror the poetic shifts in meter. Arthur included all 11 stanzas in his work, although he occasionally omits words. For example, line 33 of Wordsworth's 'Ode' begins with "doth" but in the vocal score this word is dropped (CMA 1998.158.1, 1996.204.2). As *Life* is largely syllabic it is possible he omitted words to fit his melody to this inflexible structure, although it is also possible he was working from a corrupted version of the poem. What appears as "fair" on line 15 of 'Ode' is printed as "fare" in the vocal score (e.g. CMA 1996.204.2). However, the full poem, with the correct spelling of "fair", is printed in the programme, which suggests an error in the vocal score (CMA 1996.204.1).

*Life* was premiered on 19 November 1930 at a Royal Christchurch Musical Society subscription series concert under the baton of W H Dixon, paired with Pietro Mascagni's one-act 1890 opera 'Cavalleria Rusticana' (CMA 1996.204.1). The choice to pair the works was most likely due to their length; 'Cavalleria' was relatively popular at the time, and often performed in a double bill with Ruggero Leoncavallo's 'I Pagliacci' (Girardi date unknown). In the Royal Christchurch Musical Society performance, it seems likely that Mascagni's more familiar opera was the drawcard. Lilly's new and thus unfamiliar work, on the other hand, was possibly interesting to the audience as a local composition. The work had been updated as a result of a family tragedy in the intervening years between its initial composition and premiere. In 1919, Arthur had lost his oldest son Frank, who died of meningitis at the age of five (Lilly date unknown). In response, he added an additional movement for unaccompanied chorus to *Life* in memory of Frank (*Press*, 3 September, 1930: 8). Frank's short life very much fits the poem's theme of a lost childhood. Perhaps this is why Arthur felt it was appropriate to add the chorus to *Life*.

The surviving scores and parts for *Life* are now preserved at Canterbury Museum. These were

donated by Arthur's daughter-in-law in two lots: one in 1996 (CMA 1996.204.1–10) and another in 1998 (CMA 1998.158.1–13). The Museum's collection is incomplete, with performance parts missing for some instruments, and duplicate copies for others. There is no surviving full score, only reduced scores are extant. A complete listing of the scores held at Canterbury Museum is available in the Appendix, but some general observations are worth noting. There are six copies of the vocal score published by Whitcombe and Tombs for the 1930 concert (CMA 1996.204.2–4, 1998.158.11–13). The orchestral parts and conductor's short score, on the other hand, are in manuscript (CMA 1996.204.5). There is some discrepancy between the extant orchestral parts and the orchestral listings in the concert programme. The programme (CMA 1996.204.1) lists flute, oboe, cornet, horn, trombone and harp, but the parts for these instruments have not survived. Interestingly, a second clarinet part (CMA 1998.158.9) survives even though only one clarinettist took part in the 1930 performance. Furthermore, a part marked "Cello II" (CMA 1998.158.7), which brings together elements of the cello and double bass parts, survives but was not necessarily played in the 1930 performance; it was likely created either for a performance where no double bassist was present, or as a simplified cello part for a less accomplished player. Four of the orchestral parts arrived at the Museum damaged, with the top two staves missing from each page (CMA 1998.158.2–3, 1998.158.8–9), though it may be possible to reconstruct or at least infer the original music from the conductor's score. It remains unclear whether this conductor's score (CMA 1996.204.5) was produced in preparation for the same concert or if it is in fact an earlier draft by Arthur which he nonetheless used in performance. The manuscript has numerous conductor's markings in blue pencil and the parts for individual instruments feature the same types of markings, including several instructions to use mutes, and crossings-out of extraneous bars.

The family also has a manuscript score

**Figure 1.** Arthur Lilly, *Life*, overture, bars 22–44. Showing the chromatic, sustained chords in the orchestra; the section is marked as the “divine love and sympathy theme”. Conductor’s score (CMA 1996.204.5), page 1.

marked “piano”, which contains the vocal score and music for piano. Until recently, much of Arthur’s extended family thought this manuscript was the entirety of *Life*, unaware that another branch of the family had already donated the other extant scores to the Museum (B Divehall pers. comm. 2016). The piano score was likely used by the rehearsal pianist in choral rehearsals, as implied by the crossing-out of orchestral tutti sections and fully notated vocal parts. The piano part appears to be a reduction of the orchestral scoring and no piano is listed in the concert programme (CMA 1996.204.1).

According to the programme, the orchestra for the first performance was a relatively modest size: the woodwinds consisted of pairs of flutes and oboes, but only a single clarinet and a single bassoon. The brass section was made up of two cornets (replacing the more usual trumpets), two horns and two trombones, together with a bass trombone (most likely playing the tuba part, which survives [CMA 1998.158.3]). The string sections were of chamber proportions: six first and six second violins, four violas, two cellos and two double basses. There was also a timpani and a harp (full orchestra listed in the concert programme [CMA 1996.204.1]).

The music is in 12 movements, with an opening overture followed by choruses, three

baritone solos, and an intermezzo. The overture opens the work with a bold, dramatic statement, intended as a representation of “regret at the passing of childhood” as a newspaper article written shortly before the 1930 performance explains (CMA 1996.204.1; *Press*, 3 September, 1930: 8). Various passages in the conductor’s score (CMA 1996.204.5) are labelled in the manner of Wagnerian leitmotifs; among them are the “hope and encouragement theme” and “divine love and sympathy theme”. These return later in the choral movements. The middle section of the overture consists of a long series of highly chromatic chords, played only by the treble instruments while the lower instruments in the orchestra remain silent (Fig. 1) (CMA 1996.204.5, see also CMA 1996.204.6). The overture ends with muted strings and then the chorus, as the programme tells us, “begins a story of our lives” (CMA 1996.204.1).

The overture is followed by three choruses. The first chorus, ‘There was a time’, opens with a brief instrumental introduction followed by a simple melody in the altos, who are given extended melodic passages throughout the work. The melody, inflected with chromatic passing notes, is punctuated by rising scales in the woodwind and upper strings (Fig. 2).

Eventually, the full choir joins in and towards

the close, a solo oboe interjects a plaintive motif, portraying the theme of regret as heralded in the overture. A second chorus, ‘The rainbow comes and goes’, also opens with a unison melody. In this case the melody is given to the tenors and basses who, doubled by clarinets and cellos, create a rich sonority that contrasts with the staccato soprano interjections. The calm mood of this opening, however, is soon shattered in what the newspaper article describes as “a brilliant outburst of chorus, enriched with independent orchestration with high ascending runs” (*Press*, 3 September, 1930: 8). A shift in mood from the dramatic to the playful occurs in the third chorus, ‘Now while the birds’, set in the cheerful key of D major. The movement begins with an extended orchestral section bustling with vivacity. The contemporary reviewer’s description of this as “suggestive of a village fair” is certainly apt (*Press*, 3 September, 1930: 8); in particular, the rapid scales in the flutes portray eloquently the birds in the poem’s text.

The vocal writing in these choruses, and indeed throughout the whole work, is reminiscent in its texture of much English choral music of this time, such as that of Hubert Parry

and Charles Stanford, leading figures in the English choral renaissance in the late nineteenth and early twentieth century. It is unsurprising that, as a church organist in colonial New Zealand, Lilly’s style is also imbued with these influences<sup>3</sup>. In addition, the largely syllabic text setting prevalent throughout the work allows the vocal writing to be heard through the dense orchestral textures; although the small scale of the orchestra, in contrast to the fairly large chorus, would have helped as well.

After the opening three choruses, the first solo movement, a declamatory and heroic setting of ‘Ye blessed Creatures’ is heard. This is in a three-part structure, with the two outer sections featuring the baritone soloist contrasted with a middle section for the female voices of the chorus. When the baritone soloist returns in the third part, he is accompanied only by pizzicato strings. At first, the music sounds simple and folk-like, as if the orchestra has suddenly become a large guitar. It quickly becomes more chromatic and introspective, however, bringing out the nostalgia of the text, which laments for “something that is gone”<sup>4</sup> (Fig. 3).

Following this solo, a brief orchestral

The image shows a handwritten musical score for Arthur Lilly's 'Life, 'There was a time' (Chorus 1), bars 5-7. The score is written on four staves, labeled S (Soprano), A (Alto), T (Tenor), and B (Bass). The Alto part has the lyrics 'stream, the earth and ev... my com-mon sight Do'. The Bass part has the tempo marking 'm.w. + alto'. The woodwind section is indicated by a bracket under the Bass staff.

**Figure 2.** Arthur Lilly, *Life*, ‘There was a time’ (Chorus 1), bars 5–7. Showing melody in the altos accompanied by scales in the woodwind section. Conductor’s score (CMA 1996.204.5), page 5.



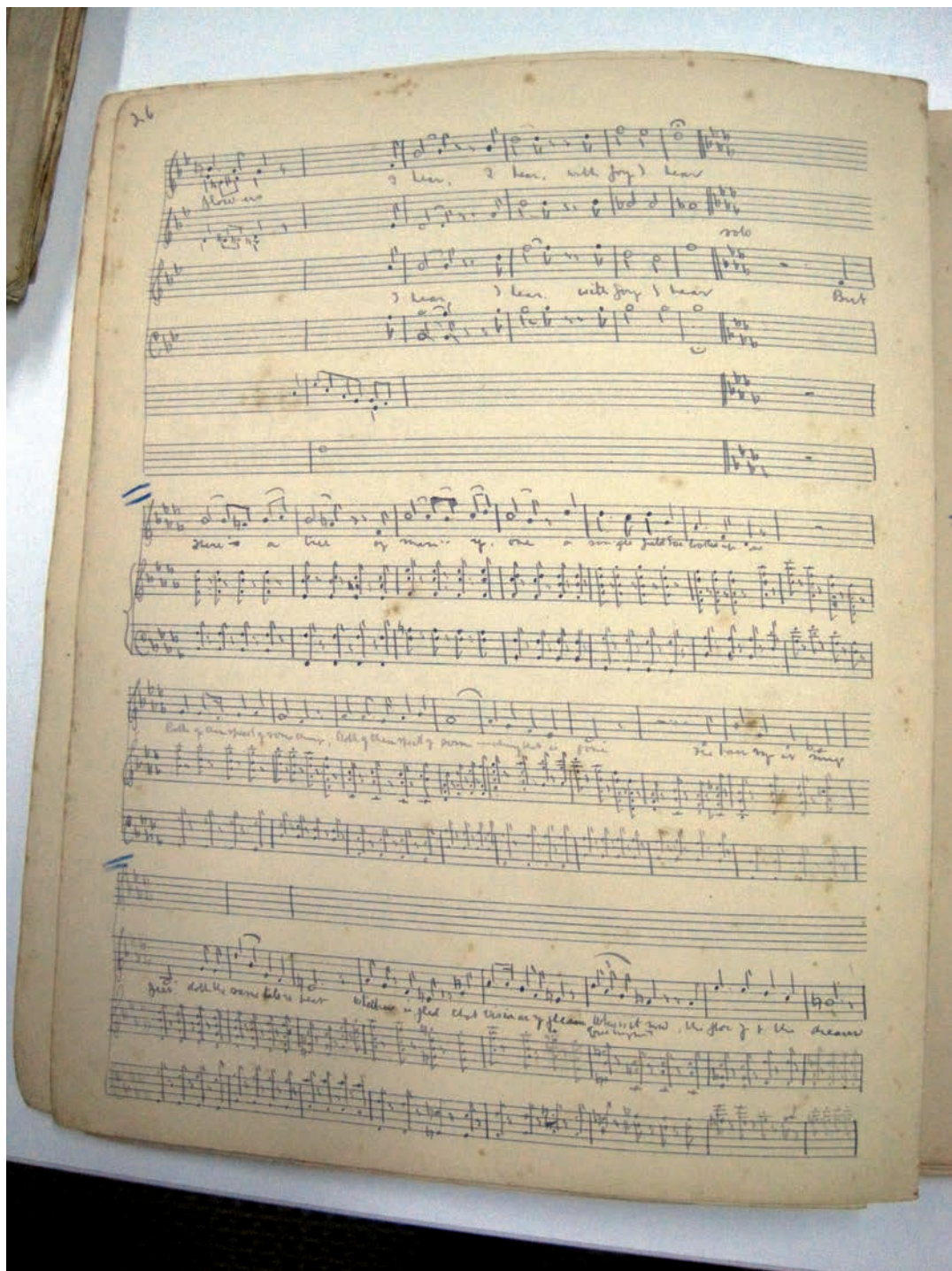


Figure 3. Arthur Lilly, *Life*, 'Ye blessed creatures'. Showing the end of the choral section and the beginning of the third section for solo baritone accompanied by pizzicato strings (not marked as such in this score). Piano rehearsal score, page 26, systems 1-3. Private collection.

intermezzo, restating the “divine love motif”, leads to the second half of the work. This opens with an unaccompanied chorus, somewhat reminiscent of an English hymn in its part-writing. Another baritone solo, ‘Behold the child’, follows. Here, brief interjections from the treble instruments once again seem to suggest the playfulness of childhood. The chorus that follows is the emotional centre of the work, and is the most substantial movement in length. The choral writing here is dramatic and grandiose, reminiscent of the oratorios of Felix Mendelssohn, one of Queen Victoria’s favourite composers, or the choral music of Elgar. Returning to the *Press* article, the previewer devotes considerable space to describing this movement:

“Mighty Prophet” is declaimed majestically by solid combinations of sound. The portion, “Thou over whom thy mortality broods”, is treated as a fugue, leading to a plaintive passage for the tenors at “Thou little child”. There is another outburst of sound immediately before a meditative intermezzo for flute, strings, and horn. The heavy chorus work enters again at “Full soon thy soul shall have her earthly freight”, diminishing it at the words, “Heavy as frost”, until it again burst forth at the word, “Life”. (*Press*, 3 September, 1930: 8).

Two shorter choruses follow this weighty statement. The first is the unaccompanied chorus written in memory of Frank, ‘Hence in a season of calm weather’. Deliberately

25.

NO 7A UNACCOMPANIED CHORUS.

slowly & simply f.f.

HENCE IN A SEAS-ON OF CALM WEATHER, THOUGH IN-LAND FAR WE

BE OUR SOULS HAVE SIGHT --- OF THAT IM-MORT-AL

OUR SOULS

(slower.)

SEA WHICH BROUGHT US HITHER, CAN TRAV-EL ---

Figure 4. Arthur Lilly, *Life*, ‘Hence in a season of calm weather’. Bars 1–12. Published vocal score (CMA 1996.204.3), page 25.



**A** NO 9 BARITONE SOLO

WHAT, THO' THE RADIANANCE, ONCE SO BRIGHT, BE NOW FOR EV - ER

**B**

TAKEN FROM MY SIGHT THO' NOTHING CAN BRING BACK THE HOUR OF  
SPLENDOUR IN THE GRASS OR GLORY IN THE FLOWER WE WILL NOT GRIEVE

Figure 5. Arthur Lilly, *Life*, 'What tho' the radiance'. Bars 1-13, showing extensive use of chromatic harmony. A, published vocal score (CMA 1996.204.2), page 28. B, published vocal score (CMA 1996.204.2), page 29.

simple in mood, it evokes very effectively the innocence of childhood. Texturally, it is a little more adventurous than the first unaccompanied movement, venturing outside the church chorale style and working towards a sweeping climax (Fig. 4). The following movement, “Then sing ye birds,” returns the listener to the bustling world of the village fair. The *Press* report describes the music as “a riot of chime-like passages, reminiscent of birds carolling, and a band playing on the village green. Merriment and brightness pervade all” (*Press*, 3 September, 1930: 8). The vocal writing is full of playful octave skips, and inventive use is made of unison passages: while at first the tenors and basses sing in unison, later it is the altos and tenors, each in the extremes of their register.

The final of the three baritone solos heralds an abrupt change of character: the music becomes introspective and moody, leading the author of the *Press* article to comment that the harmonies were unusual (*Press*, 3 September, 1930: 8). The extremely chromatic use of harmony continues throughout the movement, helping to bring out the inward-looking and meditative nature of the text (Fig. 5). An equally introspective chorus follows. The soprano writing is somewhat restrained, avoiding the upper registers, which adds to the sombre mood. Finally, the movement closes with the ‘regret’ theme, intoned by the lone, plaintive oboe and then soft chords in the lower voices and a final note from the orchestra’s bass instruments.

The final chorus, in contrast, is majestic in character. From the *Press* article we gain an insight into the programmatic writing in this movement, which has a local character:

*This chorus is the result of an impression on the composer’s mind when, as quite a young boy, he was climbing near the waterfalls in Dunedin. The arpeggio figure represents the splash of the water, the unison figure the massive boulders. On that occasion he heard some children singing on a hill in the distance and this is depicted in the chorus* (*Press*, 3 September, 1930: 8).

The work ends, however, not dramatically but

softly, fading away with just the unaccompanied sopranos and altos bringing the movement to a close with the words “too deep for tears”. (*Press*, 3 September, 1930: 8).

Overall, the music is written in a tonal, but highly chromatic idiom, typical of much of the British art music of the time. At the same time, it also draws upon other, older oratorios popular at the time, for example Mendelssohn’s ‘Elijah’, as well as the long tradition of English choral music in which Arthur Lilly had been steeped since his boyhood.

## Conclusion

Arthur Lilly’s *Life* combines the gentle lyricism of Wordsworth’s Romanticism with the richly chromatic, weighty sound world of English late Romanticism, heavily influenced by Wagner and by the English choral tradition. The music follows the themes laid out by Wordsworth, with Arthur drawing on his personal experiences to add another layer of meaning. In its 1930 version the work is given extra poignancy as a commemoration of Arthur’s young son, Frank. Although *Life* is dedicated specifically to Leslie Lilly’s military service during the First World War, it can also be viewed as an example of New Zealand’s cultural reaction to the War. Whether *Life* is typical of Arthur’s style remains unanswered. Canterbury Museum has four more pieces composed by Arthur<sup>5</sup>. A comparative study of Arthur’s extant works would shed further light on a musician who was clearly well-known in Christchurch’s early musical history, and whose *Life* may be seen as a precursor to the mid-century ‘search for tradition’ in New Zealand art music.

## Acknowledgements

Thanks to Barbara Divehall who acted as the main point of contact for the extended Lilly family; without her assistance in finding sources and double checking family stories this paper would not have been possible. Thanks also to Glenda Keam for reading an early draft of this paper and to reviewers

Roger Buckton and Jonathan Le Cocq whose feedback was invaluable.

## Endnotes

- 1 When Lilburn published his 1946 address to the Cambridge Summer School of Music in 1984, he added the title "A Search for Tradition". This phrase has subsequently gained currency among historians of New Zealand music to describe the ongoing desire for a unique national identity in musical style. See, for example, the papers presented at the 2015 Annual Meeting of the New Zealand Musicological Society, 'Searches for tradition' (<http://sounz.org.nz/events/show/2995>).
- 2 During the First World War, enlistment in any of the national expeditionary forces of the British Empire was open to all British subjects. Leslie could have equally enlisted in the Canadian or Australian forces if he had been living there at the time (Shoebridge 2015).
- 3 On the repertoire of Anglican Church choirs in early New Zealand, see Raymond White, *Joy in the Singing: The Choral Commitment of St. Paul's Cathedral Choir, Dunedin, New Zealand, 1859–1989* (Dunedin: Musick Fyne, 1989).
- 4 From line 54 of 'Ode: Intimations of Immortality from Recollections of Early Childhood' by William Wordsworth. See CMA 1998.158.1
- 5 Arthur wrote at least two other military themed pieces: 'The Battle of the Free' (CMA 1996.204.12–13) and 'In Paradise (In Memoriam to NZ Soldiers)' (CMA 1996.204.11). There is also one Christmas themed piece titled 'Christmas Joy' and a religious piece titled 'God is our Hope', which are part of group accession 122/79.

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**Appendix: Catalogue of items in Canterbury Museum collection.**

- Concert Programme: Royal Christchurch Musical Society Third Subscription Concert “Life by Arthur Lilly”, “Cavalleria Rusticana” 19 November 1930, 1996.204.1, 246 x 186 mm
- Life*. Abridged performer’s copy, vocal score, 1996.204.2, 329 x 202 mm
- Life*. Abridged performer’s copy, vocal score, 1996.204.3, 329 x 202 mm
- Life*. Abridged performer’s copy, vocal score, 1996.204.4, 329 x 202 mm
- Life*. Short score. Conductor’s notes. 1996.204.5, 306 x 246 mm
- Life*. Part for first violin, 1996.204.6, 309 x 249 mm
- Life*. Part for bass, 1996.204.7, 309 x 249 mm
- Life*. Part for second violin, 1996.204.8, 309 x 249 mm
- Life*. Part for viola, 1996.204.9, 309 x 249 mm

- Life*. Part for first cello, 1996.204.10, 309 x 249 mm
- ‘Ode. Intimations of Immortality from Early Recollections of Childhood’ By William Wordsworth, 1998.158.1, 256 x 189 mm
- Life*. Part for clarinet, 1998.158.2, 309 x 249 mm
- Life*. Part for tuba, 1998.158.3, 309 x 249 mm
- Life*. Part for first violin, 1998.158.4, 309 x 249 mm
- Life*. Part for first violin, 1998.158.5, 309 x 249 mm
- Life*. Part for first violin, 1998.158.6, 309 x 249 mm
- Life*. Part for second cello, 1998.158.7, 309 x 249 mm
- Life*. Part for timpani, 1998.158.8, 309 x 249 mm
- Life*. Part for second clarinet, 1998.158.9, 309 x 249 mm
- Life*. Part for bassoon, 1998.158.10, 323 x 265 mm
- Life*. Abridged performer’s copy, vocal score, 1998.158.11, 329 x 202 mm
- Life*. Abridged performer’s copy, vocal score, 1998.158.12, 329 x 202 mm
- Life*. Abridged performer’s copy, vocal score, 1998.158.13, 329 x 202 mm

***Catalogue of items in private collection.***

- Life*. Part for piano, Private collection

## A re-assessment of the early Māori use of silicified tuff (palla) in the Canterbury region

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Previous work has shown that a distinctive green silicified tuff, termed palla by Julius von Haast, was utilised by early Māori in the Canterbury region to manufacture small numbers of adzes. This paper presents new information on the source, composition and visual characteristics of this lithic material, along with a re-assessment of the evidence for its utilisation. A re-examination of museum collections indicates that palla artefacts were not as widely distributed as previously thought, but are largely confined to the coastal mid Canterbury area. More recent radiocarbon dating of archaeological sites near the mouth of the Rakaia River, and at Wakanui, suggest that palla was being utilised in the fourteenth century.

**Keywords:** Silicified tuff, palla, Surrey Hills, stone source, artefacts, Canterbury

### Introduction

Among the many important discoveries made by Julius von Haast in his role as Provincial Geologist of Canterbury (1861–1876) was an outcrop of green siliceous rock on the Gawler Downs, near the North Branch of the Hinds River, where he observed “a large amount of [stone] chips lying about” (Haast 1871: 85). Haast subsequently concluded that this was the source of a number of finished and incomplete Māori adzes found in the Canterbury area, and referred to the rock type as palla, a term that apparently originated in Transylvania.

Almost a century later, Wayne Orchiston (1974, 1976) provided a more detailed account of the prehistoric exploitation of palla. He listed a total of 20 localities in the Canterbury region where adzes and other artefacts had been found, based primarily on his examination of museum collections, and considered this distinctive rock type was exploited on a limited scale for a short period in the thirteenth century. There are, however, a number of deficiencies in

Orchiston’s (1976) paper, including an almost complete lack of petrological information (despite the paper’s title), and no description of the presumed source at Surrey Hills (Gawler Downs), which it seems he did not visit. None of the artefacts were described or illustrated.

The present study had two main objectives: to inspect and sample the occurrence of palla at Surrey Hills in order to provide new information on the extent of the source, composition of the rock, and evidence of its exploitation; and to re-examine the collections held by Canterbury Museum to confirm or determine the type and geographic distribution of artefacts made of this material. In particular, we considered there was a need to update Orchiston’s (1976) list given it is 40 years since his paper was published.

### Terminology

As noted above, the term palla was introduced by Haast (1871: 85) for a “green silicious [sic]



rock, occurring only on the northern side of the Gawler Downs". He also stated that he "first found it ... about seven years ago", which places his discovery at c. 1864. Haast made further reference to palla in his article on the Moa-bone Point Cave in 1874 (Haast 1874a: 77) and on his geological map of the Clent Hills District the same year (Haast 1874b). Subsequently, Cox (1877: 3) described the rock as being "variously coloured in shades of pink and green, and associated more or less with tuffaceous beds". In 1884, however, he referred to the palla as "sinter deposits", which he also reported outcropping on the north-eastern side of Mt Alford (Cox 1884: 40). By this time palla was no longer regarded as a specific rock type occurring only on the Gawler Downs, but as a more widespread geological unit.

Speight (1938:19–20) obtained a definition of palla from the 1863 year book of the Austrian Geological Survey, which broadly described it as a white, cream or greenish coloured marl or trachytic tuff found in particular parts of Austria. This led Orchiston (1976: 213) to comment that the term had been used incorrectly by Haast, although Hutton (1889: 120–121) had earlier explained how that came about: "Sir Julius von Haast told me that he had sent specimens to Vienna many years ago, and that they had been named palla by the officers of the Geological Survey of Austria". Thus Haast simply relied on the identification made by other respected geologists, and as far as he was concerned his use of the term was perfectly valid.

While palla is apparently no longer used as a geological term in Austria, or elsewhere to our knowledge, it still has some historical significance in Canterbury, and an obvious connection to Julius von Haast. Therefore we consider that the name palla should continue to be used archaeologically, with the proviso that it is restricted to the hard, mostly green, silicified tuff found at Surrey Hills. This is preferable to the more cumbersome "Gawler Downs Rhyolitic Tuff" applied by Orchiston (1976). There is no known Māori name for this rock type.

## Geological context

Palla is a minor component of the Surrey Hills Tuff, which represents the basal formation of the Mt Somers Volcanics, of mid Cretaceous age (Oliver and Keene 1989). This formation is up to 50 metres thick in places but typically less than 10 metres, and consists of welded ignimbrite, tuff and tuffaceous sediments of variable induration. It is preserved only in isolated pockets. The most extensive outcrops are at Mt Alford, and other occurrences have been recorded in the Mt Somers area, the Peter Range and along the north branch of the Hinds River (Oliver 1977; Oliver and Keene 1989). At Surrey Hills the formation rests on Mesozoic greywacke and is overlain by Hinds River Dacite. The palla is probably a water-laid tuff, deposited in a shallow lake environment, and subsequently silicified as a result of later volcanism.

No other deposits of flake quality green silicified tuff similar to the Surrey Hills palla are known from the Canterbury foothills.

## The Surrey Hills source

The prehistoric stone source rediscovered by Julius von Haast at Gawler Downs, on what is now part of Surrey Hills Station, was formally recorded in February 1969 by M Trotter as archaeological site S81/1 (now K36/1, [www.archsite.org.nz](http://www.archsite.org.nz)). Trotter noted there were several outcrops of palla but that very few of the flakes and pieces associated with them showed any sign of human modification. Orchiston (1974, 1976) did not describe the site.

The source site is located in a relatively steep-sided gully, above the access road to the Gawler Downs trig. The palla occurs within the Surrey Hills Tuff, which is exposed on the south-eastern side of the gully at GPS coordinates E1468620 N5155160 (NZ Transverse Mercator projection), at an altitude of about 480 metres above sea level, and below a small knoll composed of large boulders of dacite (Fig. 1). The main outcrops cover an area of about 40



**Figure 1.** View to the southwest of the main outcrops of palla at Surrey Hills, March 2016. L = lower seam, M = middle (main) seam.

metres by 30 metres.

At this location the Surrey Hills Tuff is estimated to be 20–30 metres thick, and generally dips at between 20° and 40° to the northeast. It consists of interbedded coarse to fine tuff and ignimbrite with at least three distinct seams of harder silicified material (palla) ranging from about 30 cm to 3 metres in thickness. The lowest seam is 2–3 metres thick and mostly highly fractured. The main or middle seam, which is at least 2 metres thick, is of better quality and includes some larger solid blocks (Fig. 2). It consists of hard green to greenish-grey palla with minor red-brown material, some of which is finely laminated. The highest seam, further upslope, is made up of individual layers or lenses at least 30 cm thick, interbedded with coarse tuff. There is also an isolated occurrence of palla 100 metres to the

north, forming a seam about 1.6 metres thick. Overall, the outcrops extend over a distance of approximately 130 metres.

There is no obvious indication that palla was physically removed from outcrops (i.e. quarried), but given the fractured nature of the rock it is possible that suitable-sized pieces were simply prised out of the seams using wooden stakes or wedges, as has been suggested for the Nelson argillite quarries (Walls 1974: 40). Most of the loose pieces on the hillside are probably natural and likely result from freeze/thaw action during the winter months, as well as disturbance by farm animals.

Only a few of the pieces on the slope below the outcrops show any sign of having been worked. These are generally of better quality material and up to 40 cm across. One piece of green to red-brown palla found near the



**Figure 2.** Large in situ block of palla at Surrey Hills. Scale = 50 cm.

main seam had distinct flake scars (Fig. 3). There were only a small number of percussion flakes, and no definite preforms were seen, nor any hammer stones. This would suggest that selected pieces were transported elsewhere to be shaped into adzes.

### **Lithologic description**

The Surrey Hills palla is a hard, tough rock that breaks with a conchoidal fracture and is easily flaked. It has a dull lustre. Fresh material is predominantly pale green in colour (5G 6/2 to 7/2), and it weathers to very pale green, pale yellowish green and light pinkish grey (colour notations according to the Munsell Soil Color Chart 2000 and Rock Color Chart 1970). Some is pale red (10R 6/2). Most palla is very fine grained (silt grade), but some is coarser and composed of darker green, angular to rounded,

fine to coarse sand-sized grains of what appear under low magnification to be altered volcanic glass. A small proportion is distinctly cherty and some pieces contain very thin, relatively straight veins of grey chalcedony. A few also display weak parallel lamination, and evidence of bioturbation (burrowing of the original soft sediment) was seen in one sample, thus supporting the idea that parts of the Surrey Hills Tuff were deposited in an aqueous environment.

No detailed petrographic study of the palla has been undertaken, but Oliver (1977: 70) reported that the fine grained tuffs are composed of up to 15% silt-sized grains of quartz and sanidine (potassium feldspar) in a matrix of glass shards and fragments. Oliver and Keene (1989) considered the more silicified rock could be termed a porcellaneous tuff.





**Figure 3.** Worked piece of palla (approximately 20 cm across) with large flake scars, Surrey Hills.

### **Chemical composition**

Two samples of palla were subjected to chemical analysis by X-ray fluorescence (XRF) at the University of Canterbury, using standard procedures. One (SH3) was of bright green very homogeneous material, the other (SH6) of slightly more siliceous rock. Both samples were collected as loose pieces but probably originated from the main seam. A sample (MA1) of Surrey Hills tuff from Mt Alford was also analysed for comparative purposes. This was a very fine grained light greenish-grey porcelanite with red to orange streaks. The results are presented in Table 1.

The analyses show the palla has a relatively high silica content of about 80–81 weight per cent  $\text{SiO}_2$  (anhydrous). It is also high in potassium ( $\text{K}_2\text{O}$  c. 7–8%), and low in Al, Na, Ca and Mg. The Fe content is variable, and

considerably higher in sample SH3. However, the green colour of the palla is not due to an unusually high iron content but to the presence of this element primarily in the ferrous state ( $\text{FeO}$ ), rather than as ferric oxide ( $\text{Fe}_2\text{O}_3$ ). Trace element concentrations are remarkably consistent, with only rubidium and strontium showing any significant variation in values.

One sample previously analysed from the Surrey Hills locality (also by XRF at the University of Canterbury) had a similar  $\text{SiO}_2$  and  $\text{K}_2\text{O}$  content but higher Na, Ca and Mg values, comparable to those of other tuffs from the Mt Somers Volcanics (Oliver 1977). The sample MA1 from Mt Alford also has a very similar composition to the palla, although Al and Na concentrations are slightly higher, as are the values for some of the trace elements, particularly Sr. However, the Zr/Nb ratio is almost identical.

### Identification and distribution of palla artefacts

All artefacts of palla that could be located in Canterbury Museum collections were examined. This included items previously recorded by Orchiston (1974, 1976), as well as other individually registered artefacts and those in bagged archaeological assemblages. We also inspected selected collections at Ashburton Museum and Otago Museum. A revised list of palla artefacts is provided in Table 2, while those reported by Orchiston (1974, 1976) that were unable to be re-located are listed in Table 3.

The identification of palla artefacts was based on a macroscopic examination only, under artificial light. The main criteria used to identify this material were the distinctive green colour and fine-grained texture though, as noted earlier, not all palla from the Surrey Hills source is green. In fact, most of the palla artefacts in the museum collections are greyish-green (5G 4/2). Some also show vague banding and a few contain thin veins. However, we took a conservative approach and excluded any artefacts that did not exhibit typical characteristics of palla. This included two “cores” previously recorded by Orchiston (1976) from Flemington and the Ashburton River mouth, which are composed of olive grey/red and yellowish-grey chert respectively. Although Orchiston (1976: 215) claimed that “after a little experience” the Surrey Hills palla could be readily distinguished from other green lithic materials utilised by South Island Māori, other than nephrite, it is evident from his misidentification of these two artefacts that his list could include other items that are not made from palla.

The location of both confirmed and unconfirmed finds of palla artefacts is shown in Fig. 4. Our re-examination of the collections at Canterbury Museum suggests that the palla has a more restricted geographic distribution than indicated by Orchiston (1976: fig. 1), with artefacts of this material being largely

confined to the mid Canterbury area. So far, palla has not been reported from any sites north of Christchurch (in good agreement with Orchiston 1976), and we have been unable to confirm any of Orchiston’s records from the South Canterbury coast, south of Wakanui. No palla artefacts have been identified among the Otago Museum collections from the early Waitaki River mouth site J41/56 (R Fyfe pers. comm.), or the Tai Rua site (J42/1) further south (personal observation).

### Palla sites

Information on the sites where palla artefacts have been found was obtained from catalogue entries, field books, Archsite (the online database of New Zealand archaeological sites), and published records. Numbers in Table 2, figure captions and text are Canterbury Museum accession numbers (CMA) or catalogue numbers (CMC) unless otherwise indicated. Altogether, we have been able to confirm the presence of palla artefacts at only 11 localities (Table 2) – about half the number listed by Orchiston (1976).

*Surrey Hills K36/1:* Several pieces of palla were collected from the source site at Surrey Hills by Michael Trotter and lodged in Canterbury Museum in 1968. Some of these were natural pieces, but there were also some percussion flakes (one with secondary flaking on the edge), a core, and one item that appears to have been used as a hammer stone. They indicate that some initial shaping of blocks had been carried out on site (Fig. 3). Fig. 5 shows the piece that has been used as a hammer (bruising and chipping occur on the lower rounded point), and the flake with retouching along the bottom edge.

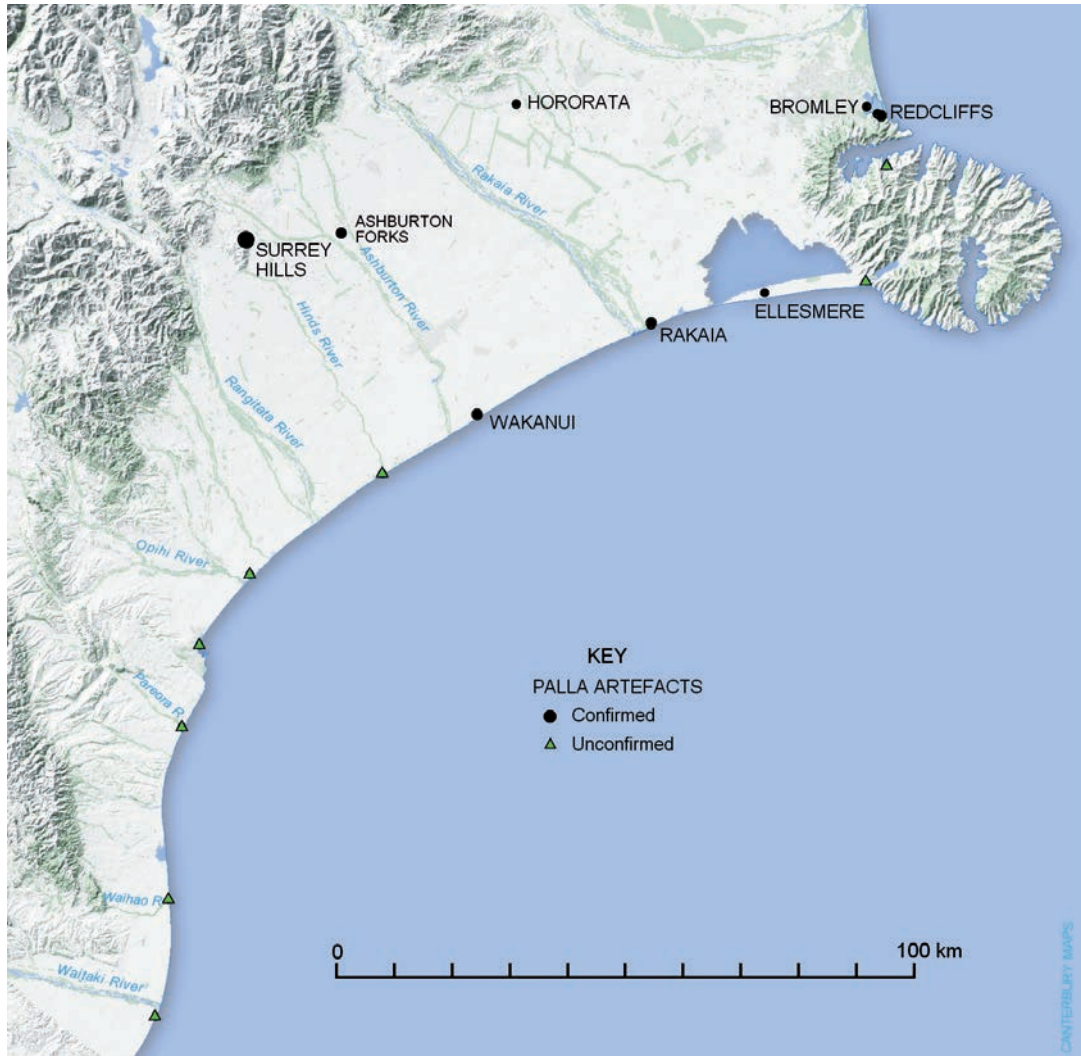
*Rakaia River mouth L37/4:* This large early Māori site near the mouth of the Rakaia River was first described by Julius von Haast in the 1870s (Haast 1870, 1871, 1879), and later by Trotter (1972a). Some detailed archaeological



**Table 1.** Chemical analyses of Surrey Hills palla (SH3, SH6) and Mt Alford porcelanite (MA1).

Sample	SH3	SH6	MA1
<b>Major elements (wt%)</b>			
SiO <sub>2</sub>	80.7	82.77	80.2
TiO <sub>2</sub>	0.06	0.05	0.08
Al <sub>2</sub> O <sub>3</sub>	9.53	8.93	10.68
Fe <sub>2</sub> O <sub>3</sub> <sup>1</sup>	1.33	0.66	0.59
MnO	<0.01	<0.01	<0.01
MgO	0.07	0.05	<0.05
CaO	0.1	0.13	0.11
Na <sub>2</sub> O	0.31	0.33	0.47
K <sub>2</sub> O	7.91	7.05	7.84
P <sub>2</sub> O <sub>5</sub>	0.02	0.02	0.02
(LOI) <sup>2</sup>	1.17	1.28	1.44
<b>Trace elements (ppm)</b>			
V	7	8	11
Cr	<3	3	4
Ni	4	<3	4
Zn	19	20	30
Zr	100	96	100
Nb	16	16	16
Ba	44	43	48
La	37	36	44
Ce	77	79	84
Nd	59	60	59
Ga	19	17	16
Pb	9	12	13
Rb	295	225	275
Sr	10	15	33
Th	20	18	20
Y	5	6	4
Rb/Sr	29.5	15	8.3
Zr/Rb	0.34	0.43	0.36
Nb/Zr	0.16	0.17	0.16

<sup>1</sup>Total iron (Fe<sub>2</sub>O<sub>3</sub> + FeO), <sup>2</sup>Loss on ignition



**Figure 4.** Map of the Canterbury region showing locations of confirmed and unconfirmed finds of palla artefacts, and the Surrey Hills source.

investigations of the site have been made more recently, particularly by Chris Jacomb (2005) and Dan Witter (2014); Witter (2008) also reviewed the archaeology of the precinct. Radiocarbon dates obtained by Jacomb (2005) on moa eggshell indicate mid-fourteenth century occupation.

Julius von Haast referred to “twenty-two pieces of roughly chipped Palla” being found at the Rakaia site by a Mr Cannon (Haast 1871: 85). An assemblage of Rakaia artefacts presented to

Canterbury Museum by presumably the same Mr Cannon does contain some flakes of palla but nothing like 22.

The material examined by us in Canterbury Museum comprised two palla adze blanks and two preforms (Fig. 6; see also Challis 1995: fig. 13), along with nine flakes (a selection of which are shown in Fig. 7). These artefacts represent only a very small proportion of the total lithic material recovered from this site.

The blanks and preforms, all of which

**Table 2.** List of confirmed palla artefacts.

Number <sup>1</sup>	Locality	Site no.	Artefact type
CMC E172.148	Surrey Hills <sup>2</sup>	K36/1	flake
CMC E172.149	Surrey Hills <sup>2</sup>	K36/1	saw?
CMC E172.150	Surrey Hills <sup>2</sup>	K36/1	flake
CMC E172.151	Surrey Hills <sup>2</sup>	K36/1	hammer
CMC E172.152	Surrey Hills <sup>2</sup>	K36/1	piece
CMC E172.153	Surrey Hills <sup>2</sup>	K36/1	worked piece
CMC E172.154.1	Surrey Hills <sup>2</sup>	K36/1	flake
CMC E172.154.2	Surrey Hills <sup>2</sup>	K36/1	piece
CMC E172.157.2	Surrey Hills <sup>2</sup>	K36/1	piece
CMC E70.57	Rakaia River mouth	L37/4	flake
CMC E70.57.15	Rakaia River mouth	L37/4	preform
CMC E138.316.2	Rakaia River mouth	L37/4	preform
CMC E150.514.1	Rakaia River mouth	L37/4	flake
CMC E150.514.2	Rakaia River mouth	L37/4	flake
CMC E159.329	Rakaia River mouth	L37/4	adze blank
'Rakaia Haast'	Rakaia River mouth	L37/4	adze blank
CMC E165.262	Rakaia River mouth	L37/4	flake
CMA 19XX.1.2461	Rakaia River mouth	L37/4	flake
CMA 19XX.1.2462	Rakaia River mouth	L37/4	flake
CMA 19XX.1.2466	Rakaia River mouth	L37/4	flake
CMA 19XX.1.2467	Rakaia River mouth	L37/4	flake
CMA 2008.1105.10	Rakaia River mouth	L37/4	5 flakes <sup>3</sup>
CMA 1972.140.1-56 A28	Wakanui	L37/8	2 flakes
W425	Wakanui	L37/8	broken preform
W425	Wakanui	L37/8	piece off adze
W425	Wakanui	L37/8	2 flakes
82	Wakanui	L37/8	core/piece
628	Wakanui	L37/8	flake
W632	Wakanui	L37/8	flake
W635	Wakanui	L37/8	flake
CMC E142.287	Redcliffs	M36/24	flake
CMA 2008.1108.42	Redcliffs	M36/24	12 flakes
CMA 2008.1108.45	Redcliffs	M36/24	1 flake
CMA 2008.1108.96	Redcliffs	M36/24	2 flakes
CMA 2008.1108.130	Redcliffs	M36/24	1 flake
CMC E159.217	Moa bone Point cave	M36/25	flake
CMA 2008.1092.78	Moa bone Point cave	M36/25	flake
CMA 2008.1092.82	Moa bone Point cave	M36/25	5 polished flakes
CMC E109.17.10.1	Sumner cutting <sup>4</sup>	M36/22	adze/chisel
CMC E109.17.10.2	Sumner cutting <sup>4</sup>	M36/22	worked piece
CMC E138.779	Avon Estuary <sup>5</sup>	M35/323?	flake
CMC E159.234	Bromley	M35/323?	adze
CMC E131.18.12	Ellesmere Spit	M37/13?	adze/chisel
CMC E165.674	Ashburton Forks	—	core
CMC E177.78	Hororata?	—	adze

<sup>1</sup>Numbers given are Canterbury Museum accession numbers (CMA) or catalogue numbers (CMC) unless otherwise indicated. <sup>2</sup>These are labelled in the Museum collection as "Montalto (Surrey Hills)". <sup>3</sup>The field report for a 1967 investigation at Rakaia (Trotter 1972a: 149) noted that 48 flakes of palla were found in a surface collection made after ploughing. <sup>4</sup>Part of the Redcliffs area. <sup>5</sup>Probably Bromley site M35/323 or nearby. Excavated in 1965 by Canterbury Museum.

were found at or around the time of the site's discovery in the 1870s, suggest that adzes were being manufactured from palla at this site. Three of the flakes have grinding marks on them, and several also have a polished surface consistent with that caused by wood working. The grinding and polish indicate these flakes had been knapped from a finished artefact during reshaping for some other purpose. There is no obvious use wear on the sharp edges of the flakes.

*Wakanui L37/8*: The Wakanui site is a large 'moa hunter' site near the mouth of the Wakanui Creek. Its location is unusual since early sites are typically situated near the mouths of large rivers – in this case the nearest

river is the Ashburton, 5 km to the southwest. The Wakanui site was discovered in 1967 and salvage excavations were carried out in 1971 and 1972 (Byatt 1972; Trotter 1972b, 1973; Mosley 2010). A radiocarbon date on calcined moa bone was obtained in 1973 (Trotter 1975a) and later recalculated (Petchey 1999: 95). Although this may not be reliable by today's standards (Fiona Petchey pers. comm. August 2016), the date suggests occupation in the mid to late fourteenth century.

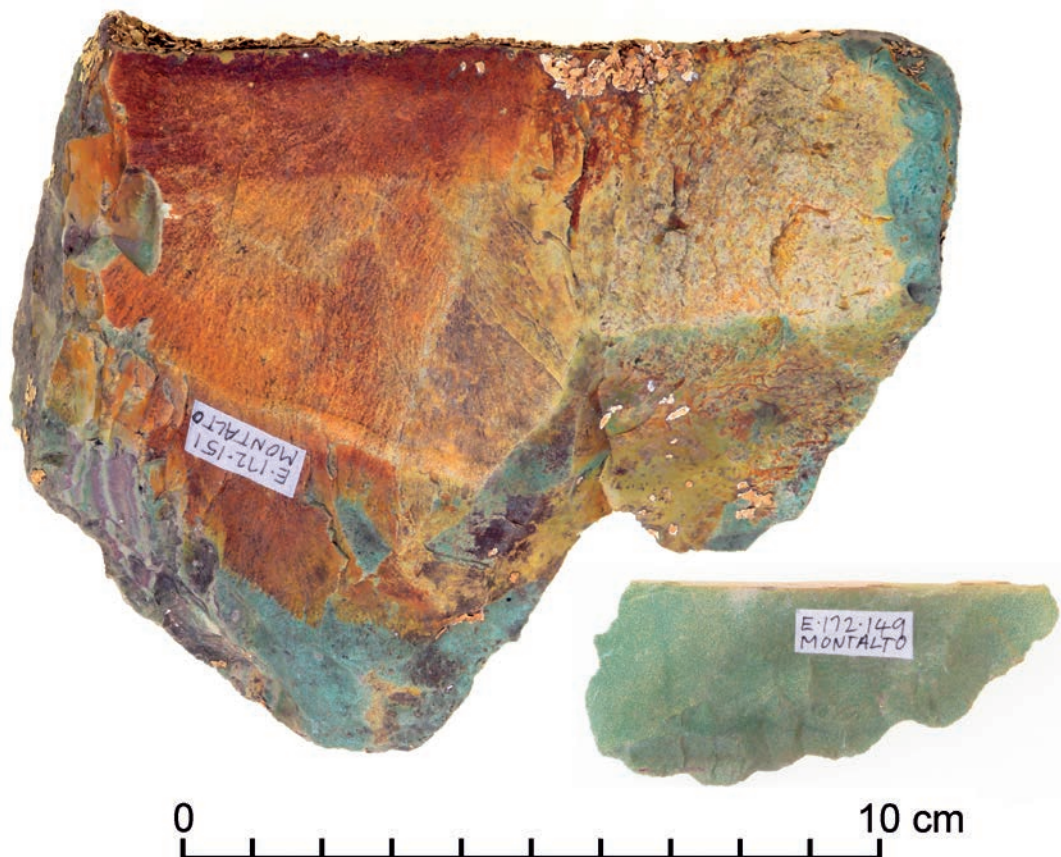
No detailed study has yet been made of the artefact assemblage from this site. Compared with Rakaia there are few adzes, but these and other artefacts are all of early types.

A search through the archaeological collection in Canterbury Museum provided

**Table 3.** List of unconfirmed palla artefacts (Orchiston 1974, 1976). Site numbers are those given by Orchiston.

Locality	Artefact type	Orchiston's source
Torlesse Range <sup>1</sup>	adzes	Haast 1871: 85
Redcliffs S84/76	two adzes	Southland Museum
Purau S84/8	adzes, flakes	Hovell, private communication
Birdlings Flat	adze	Hovell Collection (Christchurch)
Lake Ellesmere area	Duff 6A gouge <sup>2</sup>	C Collett Collection (Belfast)
Rakaia River mouth S93/20	[some cited were not located – see text]	National Museum; C Collett Collection; Haast 1871: 85.
Near Hinds River mouth	flakes	Canterbury Museum
Thorngreen near Temuka	one flake	South Canterbury Museum
Greenstone Island S111/2 <sup>3</sup>	three flakes	Canterbury Museum
Dashing Rocks S111/1 <sup>4</sup>	Duff 3B adze	Mason and Wilkes 1963: 95
Pareora River mouth S119/2	Duff 2A adze, chisel, adze frags	Collett Collection
Waihao River mouth <sup>5</sup>	three very small flakes	Orchiston survey
Waitaki River mouth S128/1	one flake	Otago Museum
Connolly's Seadown <sup>6</sup>	?	Orchiston pers. obs.

<sup>1</sup> See text, <sup>2</sup> Duff (1956: 185, 192, 389) refers to an argillite 6A gouge from Motukarara, which is on the northern side of Lake Ellesmere. <sup>3</sup> The Site Record for S111/2 (now K38/11) refers to an 'Island in Milford Lagoon' from which Graeme Mason presented E163.105–E163.171 to Canterbury Museum, but with no reference to palla. E163.166H in the Museum catalogue is for "Flake of palla. From Moa-hunter site at Opihi Mouth. Presented by Graeme Mason. Field collection." The nearest recorded moa hunter site to the mouth of the Opihi is Connollys (K38/13), some 2 km to the southwest. <sup>4</sup> See text. This site (now K39/1) is near Timaru. <sup>5</sup> Site record refers to Orchiston (1974). Mention is made of it on page 2.66 and in Appendix 1.3. <sup>6</sup> In his thesis Orchiston (1974: 2.66) refers to "Connolly's Seadown site" as a possible site where palla was used. This site, K38/13, is two km southwest of the mouth of the Opihi River, but there is no indication in the thesis that palla was actually found there. See Orchiston (1974: 3.21, 3.42–3.45).



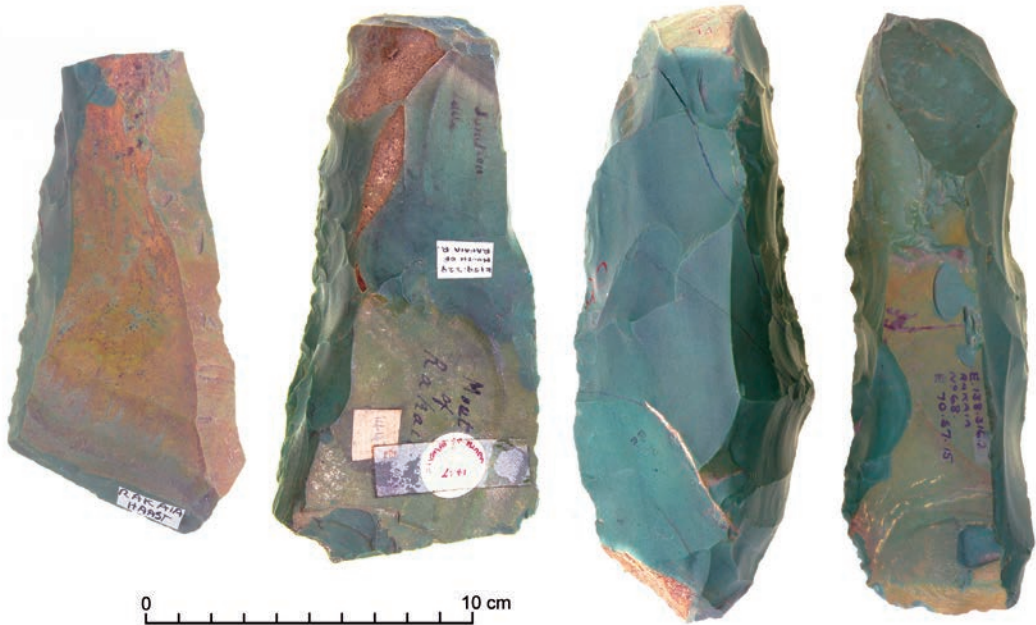
**Figure 5.** Piece of palla that has been used as a hammer (CMC E172.151; showing bruising on the lower rounded point), and flake with retouching along the edge (CMC E172.149), Surrey Hills.

two flakes of palla that were recovered by the Canterbury Museum Archaeological Society in 1972. Both were derived from a larger artefact such as an adze with use polish. There are another eight items from a surface collection held by the Ashburton Museum. They include a broken preform, a piece off a hammer-dressed adze, a small core and one flake with edge damage (Table 2), indicating both manufacture and use of palla artefacts.

*Redcliffs M36/24 (Raekura):* Raekura (Redcliffs) is another large early Māori site that was first excavated under the direction of Julius von Haast in the 1870s (Haast 1874a), though the name Redcliffs did not come into use until much later. Haast was more interested in what

was found in the adjacent Moa-bone Point Cave, but did investigate occupational deposits on the nearby sandhills. Further investigations were carried out in the late 1950s and 1960s (Trotter 1975b), leading to the proposal that parts of the site appeared to have been used for specific purposes such as the manufacture of tools from local basalt, cooking large quantities of food, or the making of bone fish-hooks and other small artefacts (Trotter 1975b: 206–207). Since then, there have been a number of investigations by various archaeologists, and several radiocarbon dates have been obtained suggesting the main occupation took place around the middle of the fourteenth century (Jacomb 2009; Trotter 2012). As well, artefact typology suggests there was minor occupation





**Figure 6.** Palla adze blanks ('Rakaia', CMC E159.329) and preforms (CMC E138.316.2, CMC E70.57.15) from Rakaia River mouth.

of the area at a later date.

Haast (1874a: 77, 85) referred to finding two flakes of palla but these have not been re-located. There is one flake in a Canterbury Museum store room, and another 16 in the Museum's archaeological collections, all from later collections. One of these was clearly from an adze, another with hammer dressing was probably from an adze, and four had a polished surface consistent with having come from a wood-working tool. A selection of these flakes is shown in Fig. 8. There is no evidence of primary tool manufacture here, only of re-shaping of wood-working tools, probably adzes.

Two adzes from Redcliffs held by the Southland Museum could not be re-located. Orchiston (1976) provided no details on these.

*Moa-bone Point Cave M36/25 (Te Ana o Hinetahi):* Moa-bone Point Cave, at the northern edge of the Redcliffs flat, was another archaeological site investigated by Julius von Haast (1874a). It had long been thought that Haast's workmen

and others had completely dug the cave out but numerous patches that had been only partly dug were found during Canterbury Museum work in the late 1950s and 1960s (Trotter 1967). Because of the dry conditions within the cave it must have been a treasure-trove of discarded and cached artefacts made of perishable materials such as wood, flax, skin and hair, and while Haast recorded stratigraphy representing both 'moa hunters' and 'shellfish eaters', it had become completely mixed by the time of the later excavations.

In a Canterbury Museum store room there is one flake of palla (CMC E159.217) recorded as 'Redcliffs' but noted as being found by excavation lying on marine sand at the bottom of the occupational deposits at Moa-bone Point Cave in 1959. There are another five flakes in the Museum's archaeological collections from excavations in mixed deposits. Four of these show grinding and use polish, and one has use polish only, which indicate that they came from a completed artefact, probably an adze. Because the site has been so disturbed there is no indication of



Figure 7. Palla flakes (CMA 2008.1105.10) from Rakaia River mouth.

their original context.

*Sumner Cutting M36/22:* The Sumner Cutting is where the road from Christchurch to Sumner was cut through a rocky spur at the northern end of what is now known as Redcliffs. Several human burial sites were found here in 1873 (Haast 1874c). In 1958, another two burial sites were found at what was presumably the same place (Trotter 1975b: 193). Artefacts found with them were mostly of early types suggesting the burials were related to the early Redcliffs occupation.

A small adze (Fig. 9) and a worked piece of palla in Canterbury Museum are labelled "Sumner Cutting". There is, however, no record that these were associated with the burial discoveries, and it is possible that this is just an early generic name for the Redcliffs area.

*Bromley; Avon Estuary (Ihutai):* No exact locations are recorded for a fragment of a small adze collected from shore-edge middens at Bromley, or for a flake simply catalogued "Avon Estuary". The one archaeological site in this area for which there is some indication of the time it was occupied is M35/323, where a number of early artefacts were excavated by the Canterbury Museum Archaeological Society in the mid-1960s.

*Ellesmere (Kaitorete) Spit:* Part of a small palla adze or chisel in Canterbury Museum is simply attributed to Ellesmere Spit. However, the probable location provided by an informant was at, or near, site M37/13, which is recorded as an occupation layer and possible pit. Other artefacts of early type have been found in this area, including those known as the "Ellesmere Cache" (Jacomb 1994: 18–19).

*Ashburton Forks:* The exact location for a core of palla found in the 1960s at Ashburton Forks, some 16 km east of the Surrey Hills source, is unknown and no archaeological site has been identified with this find. The Canterbury Museum catalogue notes that "two other pieces" were also found at the same place. The core shows evidence of percussion flakes having been removed from it (Fig. 10).

*Hororata:* No details are recorded for a small, 109 mm long, banded palla adze in Canterbury Museum, apart from its location being given



Figure 8. Palla flakes (CMA 2008.1108.42) from Redcliffs.



**Figure 9.** Small palla adze (CMC E109.17.10, broken at bottom) from Sumner Cutting, Redcliffs.

as “?Hororata”. As shown in Fig. 11, it has been flaked to shape and finished by grinding.

*Notes on other records (see Table 3):* Julius von Haast (1871: 85) reported that a Mr John Davies Enys had found “some of the Palla adzes in the Upper Waimakariri country”. It was assumed by Orchiston (1976) that they came from the Torlesse Range, which seems highly unlikely. We have been unable to obtain any further information on these adzes, but suspect they may not actually have been made of palla.

The adze recorded by Orchiston (1976) from Methven is a Duff type 1A with a well-formed hammer-dressed butt, and appears, from the unusually short blade, to have been re-shaped. We consider it is made from green metasomatised argillite, not palla.

Orchiston’s (1974, 1976) list also includes a Duff type 3B palla adze from Dashing Rocks near Timaru. This is attributed to Mason and

Wilkes (1963: 95), but although their article describes the excavations at Dashing Rocks, neither palla nor a 3B adze are mentioned. Some of the palla artefacts from other locations listed by Orchiston (Table 3) could either not be re-located in Canterbury Museum or are in private collections.

### Artefact types

*Adzes:* The adzes (toki) and chisels (whao) that Orchiston (1976) considered were made from palla were all, apparently, typical early forms. They included Duff types 1A, 2A (two examples), 3B (two examples), 4A and 6A; at least a further five were unclassified. It is not clear, however, how many of these adzes Orchiston actually sighted, as his list indicates that some of his information was obtained from secondary sources. The reliability of his record of a 3B adze from Dashing Rocks, for example, has already been noted above.

Of the seven definite adzes/chisels and preforms (both complete and broken) recorded by us, at least five have a triangular or sub-triangular cross-section, indicating that the main forms being manufactured from palla were Duff types 3 and/or 4. This would suggest that the rock type may have been more suited to the manufacture of these particular forms. Also, all of the adzes are small to medium in size, perhaps reflecting the size of readily-available pieces at the source. One of the preforms (E70.57.15, Fig. 6) from Rakaia has remnants of weathered cortex on the blade and butt, which tends to confirm that some adze blanks were only partly pre-prepared at the Surrey Hills source.

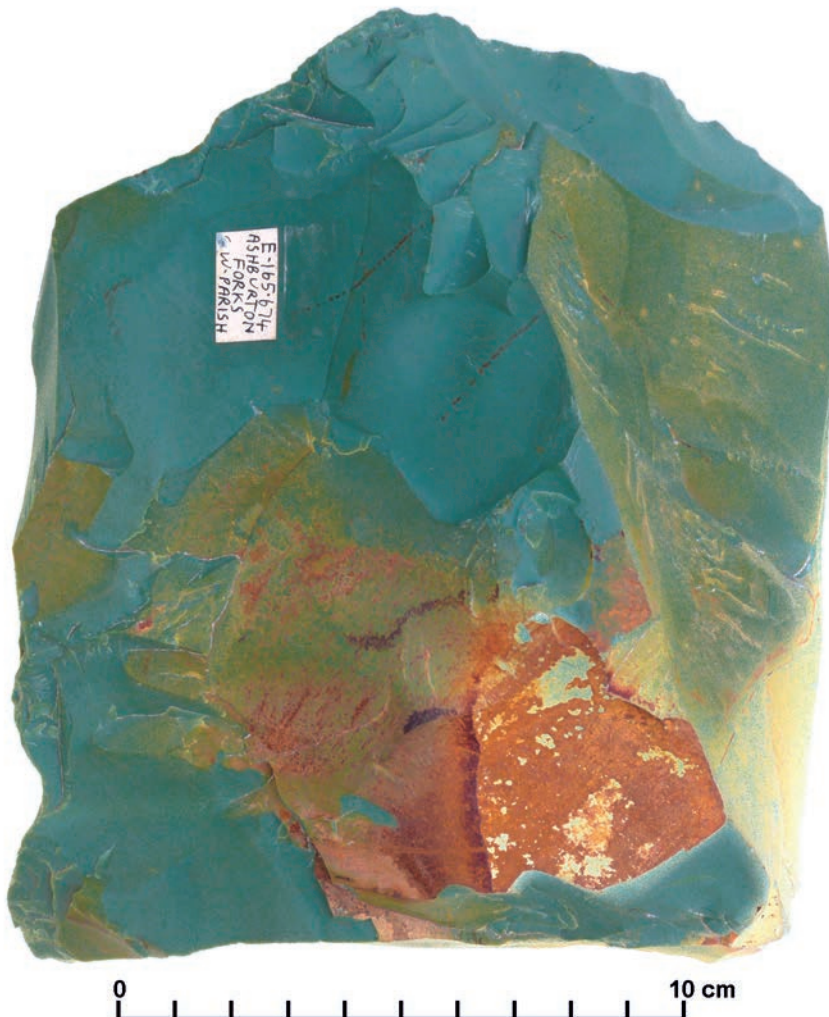
*Flakes and core:* As indicated in Table 2, flakes are by far the most common artefact type. The palla flakes held in Canterbury Museum were measured, and it was also noted whether they had come from a finished artefact or not. The width and height of flakes from the four main sites are shown in Fig. 12. For the purpose of this diagram the width is the

maximum dimension of the flake, usually but not necessarily perpendicular to the angle of the percussion strike, and the height has been measured at right angles to the width. The height/width ratio is a reflection of both the nature of the material and the particular flaking technique employed.

This plot shows a distinct grouping of smaller flakes, and a broad scatter of larger ones, but it must be acknowledged that because of selective collecting the sample will undoubtedly be biased towards larger flakes (mostly from Redcliffs and Moa-bone Point). Conversely, small flakes are probably grossly under-represented. Half

the flakes from Rakaia, Wakanui and Redcliffs (including Moa-bone Point Cave) show surface grinding or wood polish, which indicates they came from finished adzes that were being reshaped, perhaps after accidental breakage. Many of the smaller, unmodified flakes may be derived from the manufacture of preforms.

The one large core found at Ashburton Forks (Fig. 10) is 144 mm across and has a number of distinct flake scars. From its shape it seems more likely the core was used to produce flakes for cutting or scraping purposes, rather than constituting an adze blank.



**Figure 10.** Core from Ashburton Forks (CMC E165.674), Methven district.



### Discussion and conclusions

At the outset of this study there was an expectation that we would be able to usefully add to, and perhaps significantly improve upon, the earlier work of Orchiston (1974, 1976), considering the amount of new information obtained from archaeological investigations in the Canterbury region over the past 40 years. To a degree that has been achieved, but our re-assessment has also highlighted various issues with Orchiston's list of palla artefact finds, some of which probably never will be resolved. So although a few new records have been added to the list, we have actually managed to reduce it by almost half. Thus the distribution of palla artefacts now appears to be more restricted than previously thought.

It is also evident, from the number of waste flakes with remnants of surface grinding and polish, that palla adzes were not only being manufactured at selected coastal sites, but also re-fashioned there, most notably at Rakaia and probably Redcliffs and Wakanui as well. Hence the total number of finished palla adzes produced was considerably greater than the current database would suggest.

In addition, we have obtained more reliable information on the period of palla exploitation. Although none of the palla artefacts come from a directly dated occupation layer, the majority are from large early (moa hunter) sites for which the typology of a range of artefact types is consistent with early occupation. More recent radiocarbon dates for the Rakaia and Redcliffs sites, and also Wakanui, indicate that the palla was being utilised somewhat later than estimated by Orchiston (1976), in the mid fourteenth century, which means the Surrey Hills source could have been discovered in the late thirteenth or early fourteenth century.

We are also inclined to disagree with Orchiston's (1976: 217) view that the use of palla quickly fell out of favour because of the remote location of the source (about 50 km inland) and "comparatively difficult access". On the contrary, it is likely that early settlers



**Figure 11.** Palla adze (CMC E177.78) from ?Hororata.

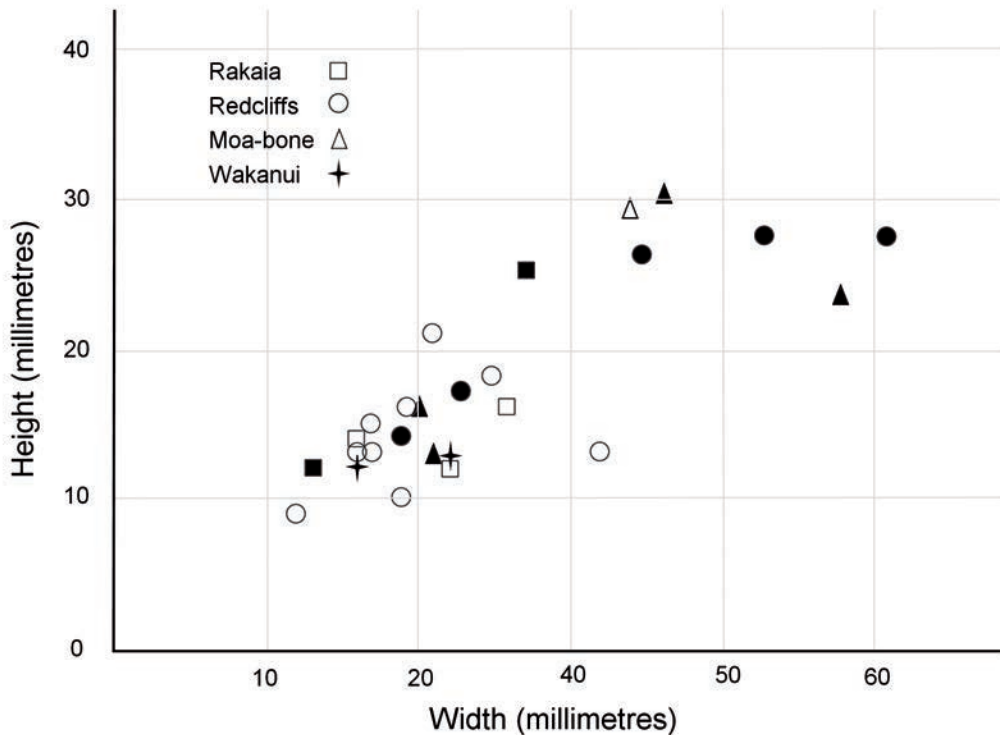


living along the coast made relatively frequent excursions into the Canterbury foothills to search for and exploit available resources, which is presumably how the outcrops were first discovered. We consider there are more compelling reasons for the limited use of palla, including ready access to superior Nelson metasomatised argillite, and to local basalt, and perhaps also the restricted size of the resource at Surrey Hills.

On the whole, however, we agree with the broader conclusions reached by Orchiston (1976), that the palla was exploited only on a limited scale within the Canterbury region, mainly for the manufacture of adzes, and probably for a relatively short period. There is also a possibility that the use of this lithic material was restricted to a single community occupying the mid Canterbury coast.

### Acknowledgements

Special thanks to Roger Fyfe and colleagues at Canterbury Museum for making the Museum's artefact collections available to us, and to Tania Robinson and Moira White for facilitating access to collections at the Ashburton and Otago Museums, respectively. We are also grateful to Geoff Trotter for taking and processing the photographs of palla artefacts, to Paul Grigg for kindly granting access to the Surrey Hills source, and Peter Oliver and Jim Cole for information on the geology. The paper benefitted from comments by Richard Walter and an unknown referee.



**Figure 12.** Size of palla flakes from the four main sites. Solid symbols = knapped from finished adzes; open symbols = no indication of grinding or polish.

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## Hybridisation in the last remaining individuals of the extinct Fiordland population of Brown Teal (*Anas chlorotis*)

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The New Zealand endemic Brown Teal (*Anas chlorotis* Gray, 1845) was once widespread on the three main islands of New Zealand, some offshore islands and the Chatham Islands. Hunting and drainage of wetlands during the early years of European colonisation, however, resulted in a severely reduced range for the species and by 1990, the last remaining wild populations were on Great Barrier Island, and in eastern Northland and Fiordland. However, by 2007, the Fiordland population of Brown Teal was assumed extinct. The potential role of hybridisation with Mallard (*Anas platyrhynchos* Linnaeus, 1758) and Grey Duck (*Anas superciliosa* Gmelin, 1789) in the decline of the Fiordland population of Brown Teal has previously been recognised, though specimen details and tissue voucher samples associated with the DNA sequences were not retained. Here, we provide new mitochondrial DNA sequences from four specimens of Fiordland Brown Teal registered in the collections of Canterbury Museum. The results provide evidence for hybridisation with Mallard/Grey Duck in all four individuals, and support previous suggestions that hybridisation could have played a role in the decline of the Fiordland Brown Teal population.

**Keywords:** Conservation, genetics, Mallard, museum, voucher specimens

### Introduction

The New Zealand endemic Brown Teal (*Anas chlorotis* Gray, 1845), or pāteke, was formerly widespread on the three main islands of New Zealand, some offshore islands and the Chatham Islands (Milicich and Daugherty 2000; Worthy and Holdaway 2002). However, hunting and drainage of wetlands during the early years of European colonisation resulted in a severely reduced range for the species (Dumbell 1986; Ferreira and Taylor 2003). As a result Brown Teal were fully protected in 1921 (Dumbell 1986), although hunting may have continued for some time after (Hayes and Williams 1982; Dumbell 1986). More recently, predation and competition with exotic species have resulted in further declines in the range of Brown Teal (Hayes and Williams 1982; Ferreira and Taylor 2003), especially on the South Island. By 1990, the last remaining wild populations of Brown

Teal were on Great Barrier Island, and in eastern Northland and Fiordland (Gemmell and Flint 2000). By 2007, the Fiordland population of Brown Teal was assumed extinct (O'Connor et al. 2007).

Remnant Brown Teal populations are still threatened by habitat modification, traffic and predation by introduced rats (*Rattus norvegicus* (Berkenhout, 1769)), stoats (*Mustela erminea* Linnaeus, 1758), possums (*Trichosurus vulpecula* (Kerr, 1792)), cats (*Felis catus* Linnaeus, 1758) and dogs (*Canis familiaris* Linnaeus, 1758) (Ferreira and Taylor 2003). Despite this, intensive management has halted the overall decline of the species. Some populations are now increasing and several new populations have been established (Hayes 2010). However, hybridisation with other *Anas* species, e.g. Grey Teal (*A. gracilis* Buller, 1869), Grey Duck



**Table 1.** Information associated with Campbell Island Teal (*A. nesiotis*), Auckland Island Teal (*A. aucklandica*) and Fiordland Brown Teal (*A. chlorotis*) tissue samples used in this study.

Museum	Museum Number	Species	Collection Location	Collection Date	Notes
Te Papa Tongarewa	OR.029911/b	<i>Anas nesiotis</i>	Beeman Wharf, Campbell Island	2005	
Te Papa Tongarewa	OR.029910/b	<i>Anas aucklandica</i>	Te Anau Wildlife Park	2010	
Canterbury	FTeal 1: 2017.4.1	<i>Anas chlorotis</i>	Lake Hapapoua, Fiordland	Egg collected 1999	Hatched at Burwood Bush, Duckling, M.J.W.
Canterbury	FTeal 2: 2017.4.2	<i>Anas chlorotis</i>	Lake Hapapoua/ Lake Poteriteri, Fiordland	Adult collected 1999	Leg Band – L-28690, M.J.W.
Canterbury	FTeal 3: 2017.4.4	<i>Anas chlorotis</i>	Lake Hapapoua, Fiordland	Adult collected 1999	White leg band, M.J.W.
Canterbury	FTeal 4: 2017.4.5	<i>Anas chlorotis</i>	Near Loch Maree, Fiordland	Early 1997	Suspected stoat predation
Canterbury	FTeal 5: 2017.4.6	<i>Anas chlorotis</i>	Near Loch Maree, Fiordland	Early 1997	Found 4 metres from FTeal 4, Decayed

(*A. superciliosa* Gmelin, 1789) and Mallard (*A. platyrhynchos* Linnaeus, 1758) is known to occur and may pose a risk to the persistence of the species (Gemmell and Flint 2000), yet is difficult to manage against.

The potential role of hybridisation in the decline of Brown Teal was demonstrated by the genetic study of Kennedy and Spencer (2000), who found evidence for hybridisation between Fiordland Brown Teal and Mallard or Grey Duck. Using mitochondrial 12S rRNA sequences, Gemmell and Flint (2000) identified a discrete clade of New Zealand Brown Teals, comprising the Great Barrier Island Brown Teal population, Auckland Island Teal (*A. aucklandica* (G.R. Gray, 1849)) and Campbell Island Teal (*A. nesiotis* (J.H. Fleming, 1935)) (as previously reported by Daugherty et al. 1999, and later confirmed by Mitchell et al. 2014), but also found that Fiordland Brown Teal fell separately with Grey Duck and Mallard, supporting the findings of Kennedy and Spencer (2000). Based on the details provided in these two studies, it appears they examined eight Fiordland Brown Teal specimens derived from three localities.

However, the details given are insufficient to identify exactly which specimens were used, and this creates difficulties for replicability of results or performing additional analyses. To help rectify this, we report on mitochondrial DNA analysis of four adult specimens identified as Brown Teal based on morphology and plumage and a chick that was considered to be a Brown Teal based on the label on the specimen. We believe at least one (possibly two) may have been reported on by the previous studies; at least one (possibly two) may be new, with the status of the other/s being uncertain.

## Methods

*Study specimens:* Four specimens identified as Brown Teal based on morphology and plumage and a chick that was considered to be a Brown Teal based on the label on the specimen, (DNA sample numbers FTeal 1–FTeal 5; corresponding to Canterbury Museum accession numbers: 2017.4.1, 2017.4.2, 2017.4.4–2017.4.6, see Table 1), were rediscovered during the cleaning of a freezer at the Department of Conservation,

Te Anau, in 2014. Labels with the specimens provided little detail on when and where they had been collected. However, some details have been ascertained after enquiries with the relevant authorities (Table 1).

**FTeal 1–3:** Specimens FTeal 1–3 most likely came from Lake Poteriteri and/or Lake Hakapoua in Fiordland (Murray Willans pers. comm. 2016). On 6–7 December 1999 one live adult was collected from Lake Poteriteri, and five adults and a clutch of seven eggs were collected live from Lake Hakapoua. DNA from these adults was reported on by Gemmell and Flint (2000) (Murray Williams pers. comm. 2015). Although it was not known whether the clutch from Lake Hakapoua was associated with any of the adults collected, five of the eggs hatched and the chicks were raised in captivity. With the exception of two individuals that died, all these birds were later re-released at Lake Hakapoua (Murray Willans pers. comm. 2015). We are unsure whether FTeal 1 (a duckling) represents a member of this clutch, or a duckling collected on a different occasion, but irrespective it seems that DNA from this specimen has probably not been previously reported. FTeal 2 and FTeal 3 are both adults with leg bands. There appears to be no records associated with the numbered metal leg band on FTeal 2, suggesting that this is the bird captured at Lake Poteriteri (the band number of this bird was not recorded at the time, Murray Williams pers. comm. 2015). Therefore, FTeal 2 appears to be one of the original wild captured adults reported on by Gemmell and Flint (2000). FTeal 3 only has a colour band (no metal band), and its association with previously reported specimens is uncertain.

**FTeal 4–5:** Labels with specimens FTeal 4–5 indicate that they were collected near Loch Maree, Fiordland, on 9 December 1996. Records indicate that a Brown Teal was captured, bled and radio-tagged at Loch Maree on 16 October 1996, and its remains (presumably after being predated by a stoat) were retrieved some months later (Murray Willans pers. comm. 2015). DNA from this bird was reported on by Gemmell and Flint (2000) and Kennedy and Spencer (2000)

(Murray Williams pers. comm. 2015) and we suggest that either FTeal 4 or 5 could be the same bird (but that the other is likely to be a previously unstudied specimen).

### Molecular analysis

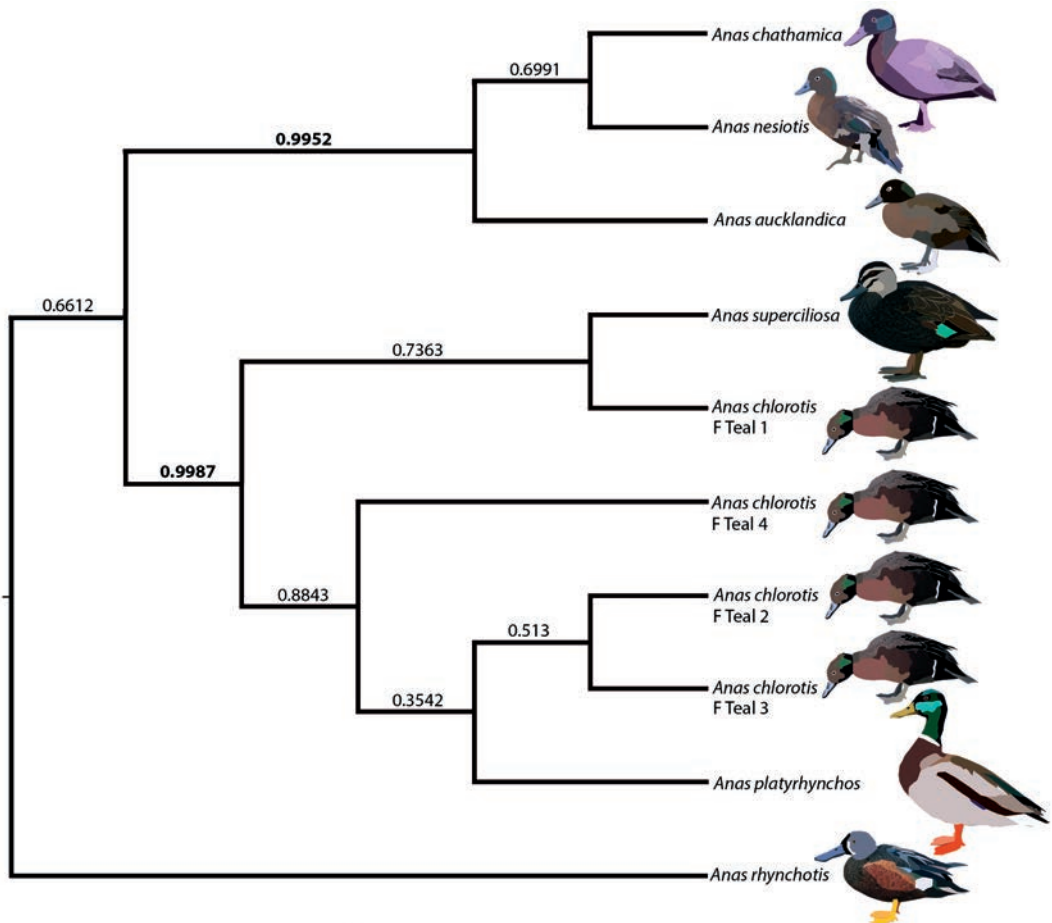
Genomic DNA was extracted from toe pads of the five Brown Teal specimens (or other soft tissues where toepads were not preserved), and from comparative specimens of Campbell Island Teal (Te Papa Tongarewa, OR.029911/b) and Auckland Island Teal (Te Papa Tongarewa, OR.029910/b) (Table 1), using the Qiagen DNeasy® Tissue Kit (Qiagen) following the tissue protocol. We amplified 598 bp and 730 bp (Fiordland Brown Teal/Campbell Island Teal and Auckland Island Teal, respectively) of the mitochondrial cytochrome c oxidase 1 (COI) gene (GenBank accession numbers MF469848–MF469853) using internal primers that contained five primer pairs (Patel et al. 2010). We performed polymerase chain reactions on a BIO-RAD MyCycler thermal cycler using Illustra™ PuReTaq Ready-To-Go Beads. The product was amplified from all specimens except FTeal 5, which was a highly decayed specimen with little remaining tissue. PCR products were sequenced using an Applied Biosystems 3500xL Genetic Analyzer. We used the programme Geneious R8 (Biomatters) to examine, edit and align forward and reverse consensus sequences for each specimen. We used MEGA v.6 to align sequences with the same region of COI for three additional species obtained from GenBank; Chatham Island Duck (*A. chathamica* Oliver, 1955), Grey Duck and Mallard (GenBank accession numbers: KF562761, JN801396, GU571240, respectively) and for the Australasian Shoveler (*A. rhynchotis* Latham, 1802) obtained from BOLD (Bold accession number: BROMB529-07). A maximum credibility phylogeny was created using BEAST, with the most appropriate model as determined using jModelTest 2 (Darriba et al. 2012) and the Akaike Information Criterion (Tamura-Nei with invariant sites), yule-speciation prior, and

MCMC chain length of 10,000,000 (recording every 1,000 states with a 10% burnin).

## Results

Our results support recent findings of Mitchell et al. (2014) that the New Zealand Brown Teal and Auckland and Campbell Island teals form a distinct clade with the recently extinct Chatham Island Duck at the base (Fig. 1). Furthermore, the four Fiordland Brown Teal specimens that yielded mitochondrial DNA were all hybrids, falling within the clade containing Mallard and Grey Duck. The hybridising species (i.e. Mallard

or Grey Duck) for each of the Fiordland Brown Teal is unclear given the low posterior values ( $<0.95$ ) for branches within the clade. However, our results nevertheless support previous findings that hybridisation with Mallards/Grey Duck may have been widespread within the Fiordland Brown Teal population (Gemmell and Flint 2000; Kennedy and Spencer 2000). All specimens from the population now analysed have Mallard/Grey Duck mitochondrial DNA.



**Figure 1.** Phylogenetic tree showing our four Fiordland *A. chlorotis* specimens, and closely-related New Zealand teals (*A. chathamica*, *A. nesiotis* and *A. aucklandica*), two hybridisation-prone *Anas* species (*A. superciliosa* and *A. platyrhynchos*) and an outgroup (*A. rhynchotis*). Branch posterior values are shown above branches with bold text indicating statistically significant groupings ( $>0.95$ ).

## Discussion

Hybridisation is common within birds, particularly waterfowl (Grant and Grant 1992; McCarthy 2006). Almost 50% of Anseriforme species are known to hybridise, but this figure is likely an underestimate (Grant and Grant 1992). This high rate of hybridisation is probably due to the evolutionary history of Anseriformes, with relatively recent diversification events during the Miocene (23–5 million years ago) (Gonzalez et al. 2009), and very shallow divergence (Pleistocene, 1.20–3.48 million years ago) within the Mallard species-complex (Mitchell et al. 2014). It is no surprise therefore that the Mallard is one of the most hybridisation-prone waterfowl species (McCarthy 2006).

Hybridisation can influence evolution (Grant and Grant 1992; Barton 2001; Lancaster et al. 2007) and may be associated with diverse costs and benefits. For example, hybrids may have a higher fitness than true-breeding individuals (Grant and Grant 1992; Veen et al. 2001), and may result in speciation (Barton 2001). However, hybrids may also exhibit reduced fitness or fertility (Haldane 1922; Howard et al. 1998; Lancaster et al. 2007). Furthermore, hybridisation can be of great concern for conservation management, as hybrid genomes may spread throughout a population. This can result in the complete or local extinction of 'pure' genomes (Rhymer and Simberloff 1996; Allendorf et al. 2001), ultimately leading to local or global extinction(s) of the species. It is possible that lowered fitness associated with hybridisation may have partly contributed to the decline of the Fiordland population of Brown Teal, as there is no evidence that any true-breeding individuals remained in recent times.

In the absence of results from analysis of nuclear DNA we cannot rule out bi-directional hybridisation, yet our results corroborate the findings by Gemmell and Flint (2000), where male Fiordland Brown Teal were at least contributing to (if not driving) the hybridisation by mating with larger Mallard/Grey Duck females. It is also not possible to determine

exactly when the hybridisation occurred, however, Gemmell and Flint (2000) suggested that it may have occurred several generations ago, given the wide geographical spread of where their specimens had been derived. Grey Duck is native and has been present in New Zealand since before human settlement (Holdaway et al. 2001). Mallard were first introduced in the late nineteenth and early twentieth centuries for recreational hunting (Dyer and Williams 2010; Guay et al. 2014), so if it was Mallard hybridising with Fiordland Brown Teal, it would have been a relatively recent event. It is also worth noting that Mallard and Grey Duck were present at Lake Hakapoua in December 1999 during the sampling expedition from which Gemmell and Flint's (2000) samples were derived, an observation that was further corroborated during a follow-up visit in January 2000 (Murray Williams pers. comm. 2015). Future examination of historical Brown Teal specimens housed in museums may provide further insights into the exact timing of hybridisation events in Fiordland.

Intensive conservation management efforts have halted the decline of remaining Brown Teal populations in New Zealand, and in 2015 the International Union for Conservation updated the status of Brown Teal from endangered to near threatened. Although the remaining populations have responded well to management and the species can become locally common when protected from predators, the risk of hybridisation between Brown Teal and other waterfowl species remains a credible threat that may lead to the decline of local populations, or indeed the entire species, as attested to by the Fiordland population.

Our study has again highlighted the importance of reporting details of specimens used in scientific studies and depositing vouchers of these specimens in museum collections. Inadequate reporting of specimen details (e.g. collection locations and dates, leg band numbers, museum registration numbers) can create difficulties in reproducing results, or interpreting previous results in the context of

new findings (Huber 1998; Pleijal et al. 2008). In this case, our results corroborate those of past studies on Fiordland Brown Teal, yet we are unsure whether this is because the specimens examined were actually those used in the previous work. Nevertheless, these specimens are now registered in the collections of Canterbury Museum for future research.

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