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# The Cheeseman-Ward correspondence (1878–1905) and exchanges of natural history specimens between Auckland Museum and H.A. Ward of Rochester, N.Y.

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## Abstract

Henry Ward, of Ward's Natural Science Establishment, Rochester, N.Y., U.S.A., visited Auckland in March 1881 (and again in November 1896) where he met Thomas Cheeseman, curator of Auckland Museum. The two men formed a professional friendship and corresponded for 27 years. During this time they arranged a series of exchanges of natural history specimens, despite Auckland Museum being only a minor customer of Ward's because it had little material to exchange and small budgets for purchase. From Cheeseman, Ward obtained bird specimens (especially kiwi *Apteryx*), ethnographic items, kauri gum and volumes of *Transactions of the New Zealand Institute*. Ward sent Cheeseman casts of 'celebrated fossils' and of the Rosetta Stone, articulated skeletons of a human and an ostrich, Blaschka glass models, mineral specimens, a lungfish and a giant salamander. After his first visit, Ward sent in succession two preparators from his establishment who worked for Auckland Museum preparing specimens for display. This and the supply of glass eyes (for taxidermy) and display labels were important ways in which Ward's gave logistical support to a small colonial museum. The correspondence between Cheeseman and Ward, archived in Auckland Museum's manuscripts collections and the Rush Rhees Library (University of Rochester), was studied to develop this account of how the two men interacted and what they were able to achieve.

## Keywords

T.F. Cheeseman; H.A. Ward; Auckland Museum; Ward's Natural Science Establishment; fossil casts; Blaschka glass models

## INTRODUCTION

Thomas Frederick Cheeseman (1845–1923) was curator of Auckland Institute and Museum from 1874 until his death, during which time he greatly developed and professionalised the organisation (Goulding 1996). From 1876, and for the rest of Cheeseman's working life, Auckland Museum occupied a small building in Princes Street to which successive small extensions were made (Wolfe 2001). Cheeseman was primarily a botanist, but published more generally in natural history and ethnology reflecting the broad interests and expertise that were necessary in a sole-charge curatorial position. For much of the time, Cheeseman was assisted by only a caretaker-janitor, and occasionally a taxidermist, as the museum could not afford to employ other staff. As part of his large workload Cheeseman was a prolific correspondent with biologists, curators and dealers throughout the world, and arranged many exchanges of natural history and ethnographic specimens with local

and foreign individuals and organisations (Goulding 1975; Gill 1999, 2008).

H.A. (Henry Augustus) Ward (1834–1906; Fig. 1), was a natural history collector and dealer from Rochester, New York State, well known at the time for advising and helping to enrich museums during the period of rapid development of popular museums in the 1870s and 1880s (Kohlstedt 1980, 1985). He ran a large business (Ward's Natural Science Establishment) that employed and trained preparators and provided natural history specimens and replicas for sale or exchange around the world (Bodry-Sanders 1998). The company published sales catalogues (and its successor does so to this day), and for several years issued a periodical (*Ward's Natural Science Bulletin*) with articles of interest to natural history museums. H.A. Ward visited Auckland in March 1881, where he met Cheeseman, and again in November 1896.

During the second half of the 19th century, it was common for museum curators around the world to organise exchanges of objects and specimens for the



Figure 1. H.A. Ward (left) with William F. Cody ('Buffalo Bill'), U.S.A., late 1800s. Photo courtesy of Rush Rhees Library, University of Rochester.

mutual enrichment of their museums (Sheets-Pyenson 1988; Kohlstedt 1991). Exchanges could also be arranged with commercial dealers like H.A. Ward. Cheeseman used his relationship with Ward to try to enrich the collections and public exhibits of a growing museum in a small and remote colonial town. With limited funds to purchase specimens outright, he sought to negotiate exchanges using specimens and objects he had at hand or could acquire locally. Ward was attempting to enhance his business and at the same time assisting museums in their collection development. Although Cheeseman was a minor client for Ward, the correspondence between the two men gives a rich account of some specimen exchanges during 30 years. This paper summarises the Cheeseman–Ward correspondence and lists surviving specimens currently in the Auckland Museum collections that are known to have been received from H.A. Ward's establishment.

## MATERIALS

We found 43 letters sent by T.F. Cheeseman (22) or H.A. Ward (21) to the other between 1878 and 1905. Both men wrote neatly with hand-writing that is easy to read. Ward had the custom of using the 'long s', giving the appearance of '-fs-' rather than '-ss-'. Some of the letters after 1896 are type-written. The letters often began by acknowledging receipt of a dated letter from the other party and some of these letters are missing.

For letters from Ward to Cheeseman, the Auckland Museum manuscripts collection has four letters in MS-58-18-2 (written February 1878 to April 1879) and 17 letters in MUS-1995-38-158 (written July 1881 to May 1897). Another letter dated 24 October 1905 is missing. There is also a memo from Ward to Cheeseman (28 March 1881) in the Land Vertebrates departmental files (Auckland Museum) and two letters

in MUS-1995-38-158 from Ward to Hugh Craig, Cheeseman's agent in San Francisco.

For letters from Cheeseman to Ward, the Ward Project (wardproject.org; accessed 2018) of the University of Rochester (N.Y., U.S.A.) has six (March 1879 to March 1883). Auckland Museum has 'Letter-books' (MUS-1996-6) containing contact copies of Cheeseman's outgoing correspondence. In these we found 20 letters to Ward (written March 1879 to December 1905): three in Letter-book 1 (MUS-1996-6-1), 15 in Letter-book 2 (MUS-1996-6-2) and two in Letter-book 4 (MUS-1996-6-4). Four of these are represented by originals in the Ward Project, but the two other originals in this repository have not been found in the Letter-books. Another three Cheeseman letters are missing (28 May 1878, 10 September 1878, 2 May 1884). Cheeseman also wrote to others at Ward's company (MUS-1996-6-4): a letter to F.A. Ward (a cousin to H.A. Ward) in June 1898, and a letter to C.H. Ward (one of H.A. Ward's sons) in May 1908 after H.A. Ward had died.

The frequency of correspondence, and enthusiasm for exchanges of specimens, were greater in the earlier years. No letters were sent (or survive) from 1880, 1888–89, 1891–96 and 1899–1904.

Ward's catalogues of his fossil casts (Ward 1866, 1870) give descriptions of the material and a selection of illustrations. We located Ward specimens in the following collecting departments of Auckland Museum: Land Vertebrates (birds—registration numbers prefixed with LB; mammals—prefix LM; amphibians and reptiles—prefix LH), Palaeontology and Marine (fish and invertebrates—prefix MA; geology—prefix GE), Archaeology (prefix 'Ethnology').

### THE CHEESEMAN-WARD CORRESPONDENCE, 1878–1905

The exchanges of specimens that Cheeseman (TFC) and Ward (HAW) achieved during 27 years of correspondence are summarised in Table 1. The majority of specimens

were exchanged during the early years of the men's relationship, mainly in the period 1881–1884. Delays in getting or despatching specimens, and the men's busy lives, meant that they sometimes lost track of what was owed. In the letters there are complex retrospective reconciliations of specimens and monetary values.

Ward asked other collectors in New Zealand to send small packages to Cheeseman that could be added to Cheeseman's larger consignments to Ward. For example, 'A box of Penguins – skins and skeletons – was sent to my [Cheeseman's] care for you [Ward] this week' (9 September 1882, TFC to HAW, MUS-1996-6-2: 44). One of the third parties was a Mr John Macpherson of Tauranga (31 March 1883, HAW to TFC, MUS-1995-38-158); another was Mr Elders, a 'druggist' at Port Chalmers (26 June 1885 and 16 October 1885, HAW to TFC, MUS-1995-38-158).

Until 1884 Cheeseman was on a very limited budget and could pay outright for very little from Ward's catalogues, relying instead on exchanges. The Auckland Province lacks large Late Holocene deposits of moa bones that could have provided Auckland Museum with surplus moa bones for exchange, as was the case for Otago Museum (Dunedin) and Canterbury Museum (Christchurch). Instead, Cheeseman relied heavily on supplying local North Island kiwi skins, skeletons and eggs (*Apteryx mantelli*) at an exchange value of £1 each. On 26 May 1884 (MUS-1996-6-2: 211–212), Cheeseman noted: 'Financial matters in reference to the support of the Museum are about squared up, at last. After this year we shall have a very fair income coming in. This is in great measure due to Mr Costley's handsome bequest, which gives us a sum of about £12,000 for investment.' But there were many calls on that income. On 26 February 1887 (MUS-1996-6-2: 480), Cheeseman wrote that he would 'try to induce our Museum Committee to obtain some things from your establishment shortly' but 'we are reserving our funds for an enlargement of the Museum Building'.

Table 1. Summary of consignments of specimens and objects exchanged between H.A. Ward (Rochester, N.Y.) and T.F. Cheeseman (Auckland Museum).

Year	Received by Ward	Received by Cheeseman
1881–1882	birds, ethnographic items (1881)	casts of fossils (1882)
1882–1883	4 kiwi skins (1883)	Queensland lungfish (1882), giant salamander (1882)
1883–1884	18 kiwi skins/skeletons/eggs, specimens of kauri gum, 13 vols of <i>Trans. NZ Inst.</i> (1884)	articulated human skeleton (1883)
1885–1886		Blaschka glass models (1885), glass eyes (1885), geology labels & minerals (1885–1886)
1896–1897	kiwi skins & ? (1896)	articulated ostrich skeleton, cast of Rosetta Stone (1897)

### Initial plans, 1878–1879

The start of the correspondence seems to have been 7 February 1878 with a letter from Ward to Cheeseman (MS-58-18-2) occasioned by a newspaper notice. ‘I noticed this morning in an old number (Nov. 77) of a San Francisco paper your call for a stuffed specimen of a Grizzly Bear.’ Ward said that he could furnish a skin or stuffed specimen and enclosed a price list (missing) of American mammals. A mounted grizzly at Canterbury Museum had been sold to them as a skin by Ward.

Cheeseman’s reply (28 May 1878) is missing, but Ward wrote again on 30 June 1878 (MS-58-18-2) saying that he was happy to make exchanges with Cheeseman and regretted that Cheeseman did not enumerate the ‘New Zealand rarities’ on offer. Regarding logistics, he asked if Cheeseman had ‘frequent opportunity by sailing ship to New York?’ Ward had sent boxes to Julius von Haast (Canterbury Museum) and James Hector (Colonial Museum, Wellington) by sailing vessels from New York. An alternative was the steamer between Auckland and San Francisco, where Ward had an agent.

Ward invited Cheeseman to set prices for his items as Ward had done in his catalogues (20 October 1878, MS-58-18-2). He asked Cheeseman ‘to kindly remember that I carry on my business to make gain, not to merely increase my varieties in stock by making a simple even exchange’. Cheeseman charged £1 a piece for kiwi skins, skeletons or eggs. Cheeseman was asked to send a box to New York or San Francisco, followed by a list of contents and a list of what Cheeseman wanted in return.

By 3 March 1879 (MUS-1996-6-1: 310), Cheeseman was preparing a case of specimens Ward had selected. He intended to send it directly to New York by the next vessel, as forwarding by mail from San Francisco was too expensive. Ward replied (22 April 1879, MS-58-18-2) with much detail regarding paperwork for the shipment. Cheeseman was to avoid using the terms ‘Minerals’ or ‘Bird skins’ in favour of ‘Snakes, Lizards, skeletons etc.’ which would give ‘a far less attractive sound to our [U.S.] Customs House Officers’. On 11 November 1879 (dated letter, H.A. Ward Papers, wardproject.org), Cheeseman advised that the promised exchange had not yet been sent. Instead, ‘... we received most advantageous offers of exchange from the Florence Museum – in fact too advantageous to neglect’. Nearly all Auckland Museum’s duplicate specimens had been sent to Florence (see Gill 2010). With the austral summer coming on (1879–1880) Cheeseman hoped to obtain most of the articles on Ward’s list of desiderata. However, any letters for 1880 have not survived and it is unclear if any specimens were exchanged before 1881.

### Desiderata

Ward’s initial list of desiderata (30 June 1878, MS-58-18-2) was kiwi eggs (*Apteryx* spp.), skins and skeletons of tuatara (*Sphenodon*), birds eggs ‘(blown on side with one smooth hole)’, seal material (Pinnipedia) and Maori jade implements. Cheeseman wrote back with lists of available items (10 September 1878; missing) and Ward restated his desiderata (20 October 1878, MS-58-18-2) which now included Maori stone implements in general,

New Zealand reptiles in spirits generally, ‘Hatteria [*Sphenodon*] in alcohol. Six or more full-grown specimens’, ‘Apteryx Mantelli [North Island kiwi]. 3 skins, 3 skeletons, and 3 eggs’, one good bird skin for each of a list of 14 species of New Zealand birds, and ‘Stenorhynchus leptonyx [leopard seal, now *Hydrurga leptonyx*]. A skin, skeleton, or skull. (I have just stuffed and sold one, and I would like another)’.

In later years, Ward asked often for skins, skeletons and eggs of the kiwi. Cheeseman could oblige, but for eggs ‘it is an uncertain business, and at all times they are very difficult to obtain’ (9 September 1882, MUS-1996-6-2: 44). Ward asked for Pacific Islands shells on 15 December 1886 (MUS-1995-38-158). On 3 March 1890 (MUS-1995-38-158), he requested ‘well-preserved Marine Invertebrates (notably Sponges or Echinoderms)’ and skulls and skeletons of cetaceans.

### Ward’s visit to New Zealand, 1881

In 1881 H.A. Ward set out on a year-long collecting tour to Australasia and South-east Asia (Anon. 1881), sailing from San Francisco on 14 February and intending to spend about a month in New Zealand before proceeding to Australia. He reached Auckland on 9 March 1881 aboard *City of Sydney* (*New Zealand Herald* 10 March 1881: 4) the newspaper noting that he ‘... will probably give some lectures on physiology, of which science he is an ardent student ...’. ‘Since his arrival in the colony [Ward] has visited most of the places of interest in the neighbourhood of Auckland, and paid a flying visit to the Lake district [i.e., Rotorua] and the active volcano of White Island’ (*New Zealand Herald* 31 March 1881: 5). He particularly admired the Pink Terraces at Rotomahana. Ward’s visit to the Bay of Plenty also included trips to Whale, Karewa and Mayor Islands and the Rurima Rocks (*Bay of Plenty Times*, 16 April 1881: 2) and after New Zealand he intended to travel to Australia, New Guinea and South-east Asia.

The opportunity for Ward and Cheeseman to meet in Auckland would have intensified their commitment to exchange specimens. It established a personal connection between them, and years later (6 January 1886, MUS-1995-38-158) Ward wrote: ‘I much wish that you could spend a forenoon with me here [in Rochester] and then I spend the afternoon with you there [in Auckland]’. On 3 March 1890 (MUS-1995-38-158) Ward wrote in similar vein: ‘It seems to me a very long time since we have corresponded. I often think of you and our friendly visits together in 1881, together with our transactions in years immediately subsequent’. Cheeseman expressed a wish that he could look in person through Ward’s establishment (1 March 1886, MUS-1996-6-2: 374–5).

Ward was able to inspect Auckland Museum for himself and see the strengths and weaknesses of its collections. In 1881 he was also able to take away a consignment of specimens he was receiving on exchange. Cheeseman would have been able to get advice from Ward on many aspects of current museum practices. Cheeseman lacked access to a competent taxidermist to prepare specimens and after the 1881 trip Ward was able to recommend young men trained at his

own establishment who were keen to travel. The first was Charles De Kempeneer (c. 1852–1884) who came to Auckland for just over two months in 1882, the museum lacking the funds to employ him for longer (Gill 2018). Later, after the museum received the Costley Bequest of 1884, Ward sent Charles Francis Adams (1857–1893) who worked at Auckland Museum from January 1885 until February 1887 (Gill 2004, 2014).

#### Casts of ‘celebrated fossils’: the 1881–1882 exchange

An exchange is itemised in a four-page foolscap document in Cheeseman’s writing (‘List of Exchanges with Prof Ward, with values’; Auckland Museum Land Vertebrates Department, folder ‘Ward Exchange’). It has a memo attached that was written and signed by Ward and dated 28 March 1881 at Auckland. The first two pages give the items that Auckland Museum provided. From New Zealand there were birds (40 skins and skeletons, a kiwi egg and a moa footprint), four lizards, a seal skull, a whale skull, 47 Maori stone implements and a specimen of nickel. There were also 15 bird specimens and seven Pacific ethnographic items that were ‘Duplicates from Mr [Andrew] Goldie’s New Guinea Collections’.

The last two pages list casts of fossils ‘to be forwarded by Prof. Ward’. There were six skulls or framed slabs (showing exposed fossils *in situ*) of mammals (Figs 2, 3); a tarsometatarsus and egg of the elephant bird (*Aepyornis*)<sup>[1]</sup>; seven framed slabs of Mesozoic marine reptiles (Figs 4, 5); six framed slabs of fishes; nine invertebrate specimens (Fig. 6); and a set of 96 large scale models of foraminiferal species. The framed casts have descriptions, perhaps copied out in advance from Ward’s catalogue, like ‘Skeleton on slab’ and dimensions of the slabs are given. Ward annotated the list ‘List of Casts to be sent by me’. Table 2 lists the fossil casts that Ward sent to Auckland Museum for the 1881–1882 exchange.

Ward’s memo reads:

‘I have this day received from Mr. T.F. Cheesman [*sic*] various specimens of Natural History valued at £55.10.0 (including 12 skins of *Apteryx* still to be sent me.) In exchange for these specimens I hereby agree to send to the Auckland Institute and Museum a certain series of Casts of Celebrated Fossils amounting [*sic*] at my catalogue prices to



Figure 2. Plaster cast of Neanderthal skull cap (*Homo neanderthalensis*; Ethnology 23203.1; Ward’s 1866 catalogue #1; plastotype). Received from H.A. Ward, 1882. Original fossil, from the Neander Valley near Düsseldorf (Germany), held in Rheinisches Landesmuseum, Bonn.

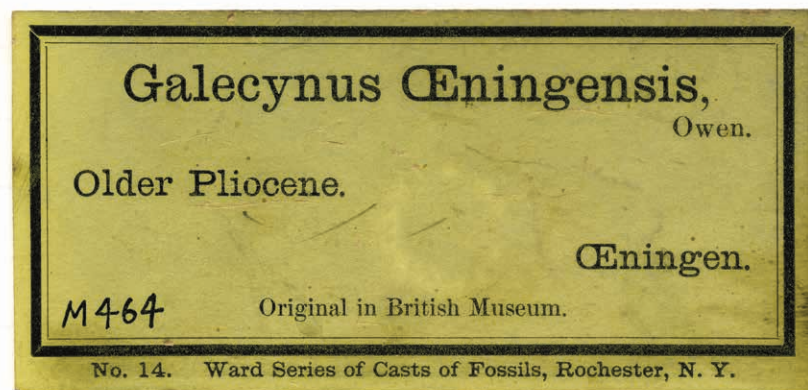


Figure 3. Original display label for the framed plaster cast (LM464; Ward’s 1866 catalogue #14) of the fossil skeleton of the carnivorous mammal *Canis palustris* (formerly *Galecynus oeningensis*). Received from H.A. Ward, 1882.

Table 2. Casts of vertebrate and invertebrate fossils, and protozoan models, received by Auckland Museum in 1882 on exchange from H.A. Ward. Specimens marked 'lost' have not survived in the collection. Those with registration numbers marked by an asterisk (\*) are plastotypes of the original species.

Species as listed in original documentation	Current species name for specimens that have survived	Specimen category	Ward Cat. No. (1866)	AIM Reg. No.
<b>Mammals</b>				
'Engis skull' [early man]	<i>Homo sapiens</i>	skull	2	Ethnology 23203.2
Neanderthal skull	<i>Homo neanderthalensis</i>	skull	1	Ethnology 23203.1*; Fig. 2
<i>Galecynus oeningensis</i>	<i>Canis palustris</i>	framed slab	14	LM464; Fig. 3
<i>Sivatherium giganteum</i>	–	skull	48	lost
<i>Mastodon giganteus</i>	–	skull & mandibles	146	lost
<i>Diprotodon australis</i>	–	skull & mandibles	181	lost
<b>Birds</b>				
<i>Aepyornis maximus</i>	<i>Aepyornis maximus</i>	tarsometatarsus	186	LB3896
<i>Aepyornis maximus</i>	<i>Aepyornis maximus</i>	egg & mounting	186	LB4002
<b>Reptiles</b>				
<i>Ichthyosaurus intermedius</i>	<i>Ichthyosaurus communis</i>	framed slab	207	LH1630; Fig. 4
<i>Ichthyosaurus tenuirostris</i>	<i>Leptonectes tenuirostris</i>	framed slab	220	LH1176
<i>Plesiosaurus dolichodeirus</i>	<i>Thalassiodracon hawkinsi</i>	framed slab	225	LH1629*; Fig. 5
<i>Plesiosaurus macrocephalus</i>	<i>Plesiosaurus macrocephalus</i>	framed slab	227	LH1047*
<i>Pliosaurus brachydeirus</i>	<i>Pliosaurus brachydeirus</i>	framed slab	231	LH1365
<i>Pterodactylus crassirostris</i>	<i>Scaphognathus crassirostris</i>	slab	241	LH1635*
<i>Crocodyliformis robustus</i>	–	slab	249	lost
<b>Fishes</b>				
<i>Holoptychius nobilissimus</i>	–	slab	300	lost
<i>Cephalaspis lyellii</i>	<i>Cephalaspis lyellii</i>	slab	313	MA40717
<i>Lepidotus maximus</i>	<i>Scheenstias maximus</i>	slab	Not in this catalogue	Seen but probably not accessioned
<i>Aspidorhynchus speciosus</i>	<i>Aspidorhynchus ornatissimus</i>	slab	319	MA40708
<i>Microdon elegans</i>	<i>Proscinetes elegans</i>	slab	320	MA40706
<i>Squatina acanthoderma</i>	–	slab	330	lost
<b>Crustaceans</b>				
<i>Asaphus gigas</i>	–	slab	373	lost
<i>Limulus giganteus</i>	–	slab	364	lost
<b>Insects</b>				
<i>Aeschna eximia</i>	<i>Aeschna eximia</i>	slab	451	MA40630
<b>Molluscs</b>				
<i>Ammonites cornucopia</i>	–	slab	488	lost
<i>Ammonites bisulcatus</i>	–	slab	473	lost
<b>Crinoids</b>				
<i>Pentacrinus briareus</i>	–	slab	945	lost
<i>Pentacrinus subangularis</i>	<i>Seiocrinus subangularis</i>	slab	942	MA39521
<i>Eucrinus liliiformis</i>	<i>Encrinus liliiformis</i>	slab	919	MA40714; Fig. 6
<i>Apiocrinus parkinsoni</i>	<i>Apiocrinus parkinsoni</i>	slab	899	MA40705
<b>Protozoans</b>				
Set of 100 foraminiferal specimens of 96 species	–	models on brass stands & blocks	pp. 186–260	lost

\$US268.25 = £55.10.0. (List signed by me.) These casts I will if practicable send from Melbourne (Australia) about one month hence. Otherwise they will be sent from New York as soon after June 1st '81 as a ship may be leaving for Auckland. In either event the entire series of specimens will be carefully packed at my expense and delivered to the ship which is to bring them.'

A local newspaper itemised the exchange and concluded: 'The specimens and casts that are to be obtained from Professor Ward are expected to cover a large portion of the available wall space in the Museum Hall, and thus add very much to the attractiveness of the Museum' (*New Zealand Herald* 31 March 1881: 5). From Sydney (13 July 1881, MUS-1995-38-158), Ward wrote: 'When I reached Melbourne I found that Prof. McCoy of the University had taken a large lot of my casts of celebrated fossils and among them many of the nos. which you had on your list. So I at once wrote home with [a] copy of your list, and requested them prepare them and ship to you by first vessel to N.Z.' He hoped Cheeseman would have them within a few months. Cheeseman's only concern was 'that a vessel direct to Auckland will be selected, as the transshipment from the Southern Provinces would double the risk of breakage'

(3 August 1881, MUS-1996-6-1: 453). They were sent on the barque *Beatrice Havener* (8 November 1881, TFC to HAW, MUS-1996-6-1: 472).

In February 1882, Cheeseman acknowledged safe receipt of the fossil casts (MUS-1996-6-2: 3). 'They came to hand in splendid condition, and we are very well pleased with them. I only wish we were in a position to order an additional number of them but until we get a regular income for the Museum we cannot purchase much. One of your complete series would be of great educational value here.' The museum's annual report for 1881–82 noted (Anon. 1882a: 7): 'Advantage was taken of the recent visit to Auckland of Professor H.A. Ward, of Rochester, to obtain for the Museum a set of the more valuable of his instructive casts of fossils. The casts have lately arrived from New York, and the greater portion have just been placed in the Museum.'

*Ward's Natural Science Bulletin* (e.g. Anon. 1882b) periodically repeated background details about the fossil casts. They were moulded from original fossils in European and American museums in the late 1860s and were available in named series of 76, 170 or 330 specimens. Sets had been sold to many museums around the world with some institutions taking orders worth \$US1000–3000. Auckland Museum was a minor player, taking some 30 casts (plus foraminiferal models).

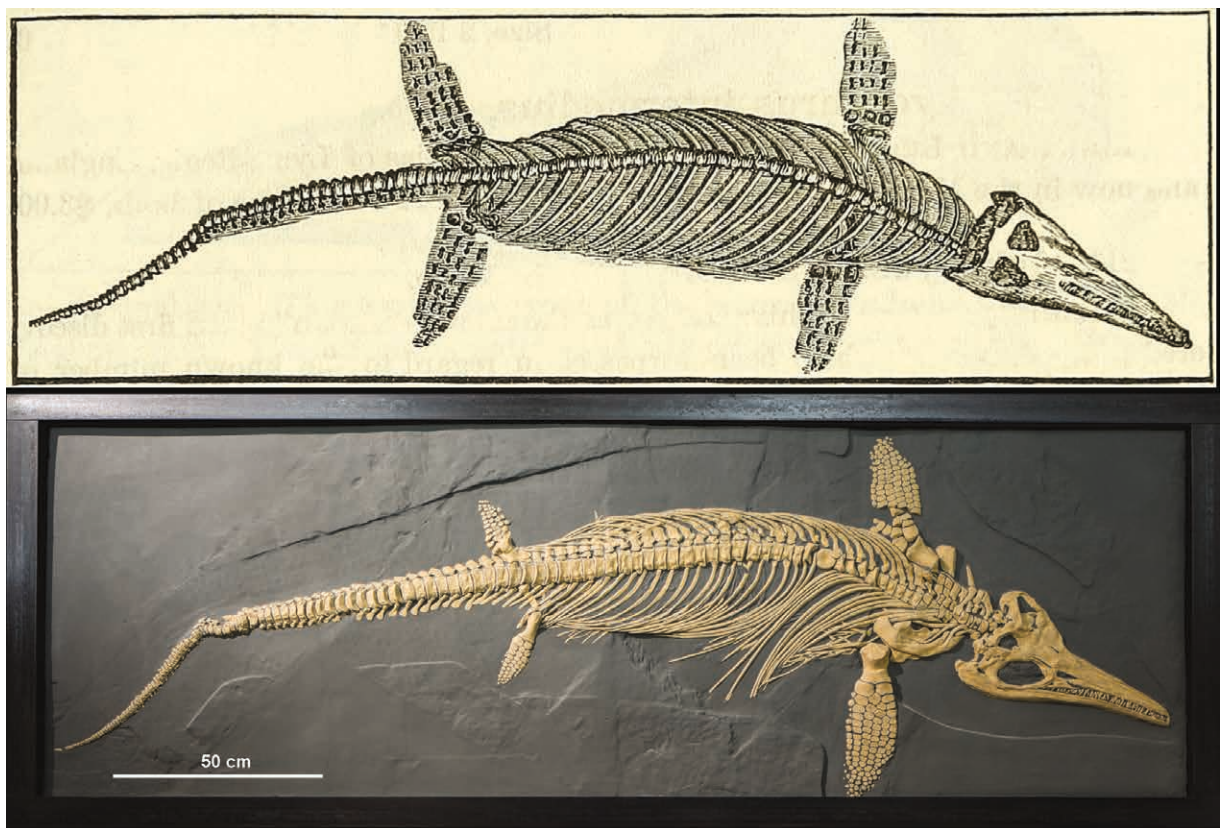


Figure 4. Fossil skeleton *in situ* of the ichthyosaur *Ichthyosaurus communis* (formerly *I. intermedius*). Original fossil, from near Glastonbury (England), held in The Natural History Museum, London. **Above:** Sketch from Ward's 1866 catalogue (#207; note poor illustration). **Below:** Framed plaster cast (LH1630; c. 2.76 m x 0.92 m) as displayed currently in Auckland Museum's Origins Gallery (Cheeseman Hall). Received from H.A. Ward, 1882.



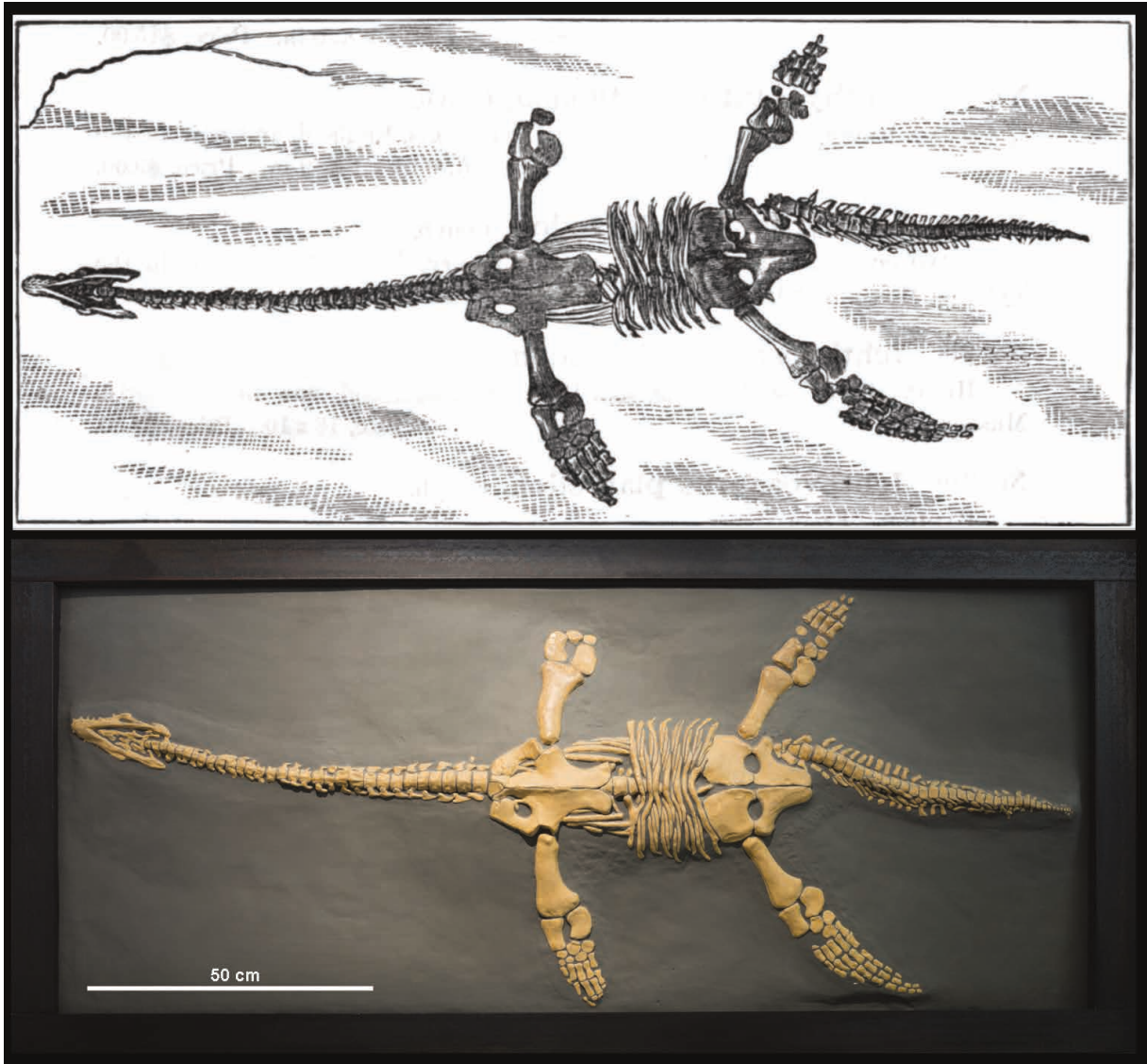


Figure 5. Fossil skeleton *in situ* of the plesiosaur *Thalassiodracon hawkinsi* (formerly *Plesiosaurus dolichodeirus*). Original fossil, from near Glastonbury (England), held in The Natural History Museum, London. **Above:** Sketch from Ward's 1866 catalogue (#225). **Below:** Framed plaster cast (LH1629; c. 1.84 m x 0.78 m; plastotype) as displayed currently in Auckland Museum's Origins Gallery (Cheeseman Hall). Received from H.A. Ward, 1882.



Figure 6. Plaster cast of the fossil crinoid *Encrinus liliiformis* (MA40714; Ward's 1866 catalogue #919). Original fossil from the Muschelkalk, Braunschweig (Germany); said to have been in Ward's personal collection. Received from H.A. Ward, 1882.

The outstanding kiwi specimens in this exchange ‘went by mail steamer last month to San Francisco, and would be placed in the hands of your agent there, Mr Clements. ... You will find one more than the number, two of the skeletons counting as one’ (8 November 1881, TFC to HAW, MUS-1996-6-1: 472). At the bottom of Cheeseman’s original letter (dated letter, H.A. Ward Papers, wardproject.org), Ward noted that nine skins and four skeletons of *Apteryx mantelli* were received, the ‘Skeletons indifferent’. Yet Ward reported diplomatically to Cheeseman (24 May 1882, HAW to TFC, MUS-1995-38-158) that the kiwis were ‘very acceptable’.

### Unusual fish, 1882

After Ward left Auckland, Cheeseman wrote (3 August 1881, MUS-1996-6-1: 453):

‘Seeing that you are passing through Queensland, it has occurred to me that you may get specimens of *Ceratodus* [the Queensland lungfish, now *Neoceratodus*]. If so I should much like to have a specimen for our Museum. I could arrange to let you have its value in *Apteryx* [kiwi] skeletons or other birdskins if you prefer.’

Ward replied from Darwin (1 September 1881, MUS-1995-38-158) offering one or two of the fish in alcohol at £4 each, or each exchanged for four kiwi skeletons. Cheeseman wanted one (8 November 1881, MUS-1996-6-1: 472) and the fish was brought to Auckland Museum from Rochester by Charles De Kempeneer (9 September 1882, MUS-1996-6-2: 44) in July 1882 when he began a short stint as preparator (Gill 2018). The *New Zealand Herald* (20 February 1883: 6) noted ‘a fine specimen of ceratodus received [by the museum] in exchange from Professor H. A. Ward’. It has not survived in the collection (T. Trnski, pers. comm. to BJB July 2018).

Though not mentioned in any surviving letters, Auckland Museum has a mounted specimen (real, not a cast; LH108) of the giant salamander *Cryptobranchus japonicus* from Japan, received from Ward in 1882.

### Human skeleton: the 1883–1884 exchange

On 4 December 1882 (MUS-1996-6-2: 66), Cheeseman wrote: ‘I want to obtain a good and well-mounted human skeleton – adult and perfect, and if possible, a male. Can you supply me with one in exchange for Apteryx skeletons and eggs? If so, you might send it at any time to my San Francisco Agent, Mr Hugh Craig, 412 California St. I should prefer one of the North American Indians. Please mount it in the manner you think most suitable for Museum purposes.’ Early next year it ‘arrived quite safely’ from San Francisco (27 March 1883, MUS-1996-6-2: 88). LM131 is an articulated human skeleton in a standing position with original mounting and base (see Gill 2016: 7–9). In 1898, or soon after, Cheeseman created the museum’s first register of vertebrate specimens (the ‘Blue Book’; see Gill 1984). The first specimen Cheeseman entered in the Blue Book was the Ward human skeleton. Its original number was

therefore V1 (‘V’ for vertebrates) and this is marked on the black wooden base of the skeleton in original lettering. In the Blue Book printed column headed ‘Locality’, Cheeseman wrote against the entry for V1 ‘Locality not known’. This indicates it is a general medical and teaching skeleton, and not identifiable as from one particular ethnic group.

*Ward’s Natural Science Bulletin* periodically detailed the human skeletons available to buy (e.g. Anon. 1882c). Some were imported from Paris but most were prepared ‘by Parisian workmen in my own establishment’. LM131 matches the description of the mid-priced of the three categories of Ward’s general articulated human skeletons: ‘Mounted with Bronzed Standard on Black Walnut pedestal’. These were priced at \$US50–55. A mounted American Indian skeleton would have cost \$US100 (Anon. 1882d) and Auckland Museum’s small budget alone explains the sending of a cheaper generic skeleton.

In 1882, Cheeseman had sent an extra four North Island kiwi specimens (two skeletons and two eggs) in addition to the four kiwi skins owed for the Queensland lungfish (4 December 1882, MUS-1996-6-2: 66). Cheeseman was putting aside further kiwi specimens and ‘I have also numerous specimens of Ambrite ready [fossilised gum of the kauri *Agathis australis*] – but you must not expect to have them so fine as the two you carried off when in Auckland. I have never been able to replace them’ (27 March 1883, MUS-1996-6-2: 88). Cheeseman could also supply volumes 2–14 of *Transactions of the New Zealand Institute* at 10/- per volume. To minimise problems with the U.S. Customs, as in his previous correspondence (22 April 1879, MS-58-18-2), Ward advised Cheeseman to label consignments as ‘Skeletons, Skulls, Eggs and other objects of Natural History’ without using the words ‘Mineral or Bird skin’ (26 May 1883, MUS-1995-38-158). Publications were to be put at the bottom of the box ‘and probably our Customs House people will not molest’ (8 February 1884, MUS-1995-38-158).

In April 1884 (MUS-1996-6-2: 198–201) Cheeseman sent to Ward’s agent in San Francisco five eggs, five skeletons and four skins of the North Island kiwi, specimens of kauri gum to the value of 10/- and a full set of *Transactions* (13 volumes). Ward was travelling overseas for much of 1884 but reported on 3 April 1885 (MUS-1995-38-158): ‘Your box came duly. But, two of the five Apteryx Eggs were badly cracked on the way.’

### Blaschka’s ‘Glass Models of Invertebrata’, 1885

Auckland Museum has seven Blaschka glass models of invertebrates (Table 3; Fig. 7). Although none has specific documentation, all are likely to have been acquired in 1885 from Ward. On 9 September 1882 Cheeseman wrote to Ward (MUS-1996-6-2: 44): ‘I am anxious to obtain a few of Blaschka’s glass models of invertebrates. I think you told me you had been appointed his agent in America. Could you send me a priced catalogue of his specimens? I would either buy a few, or which suits us better, exchange for them if there is anything I can supply you with.’ Barely a month later Ward replied (14 October

1882, MUS-1995-38-158) that ‘I send you my Catalogue of Blaschka’s Glass Models. I shall willingly exchange some of them for what you can spare that I want.’

Cheeseman, always short of funds and exchange material, appears not to have been in a position to order until 1884 and even then he asked Ward (28 April 1884, MUS-1996-6-2: 198–201) to send him a few specimens before committing to a larger order: ‘If you happen to have one or two of Blaschka’s glass models of invertebrate animals by you, please send also. I have thought several times of ordering them, but should like to see an example before actually doing so.’

Some models arrived nearly a year to the day later, but which ones and how many are not clear. Cheeseman’s ‘Many thanks for the samples of Blaschka’s [*sic*] Glass-models, which Mr Adams safely delivered’ as well as his earlier ‘If you happen to have one or two of Blaschka’s glass models’ suggest that only a few were received. Correspondence between Ward and Cheeseman suggests (3 April 1885, MUS-95-38-11-3) the shipment of goods brought by Adams had a value of £20. Ward, who was at that time in debt to a party in Australia, wrote ‘I am asking Mr Adams to send £20 which he owes me to a party whom I owe in Australia’. He then reminds Cheeseman that ‘your museum are owing me somewhat for some glass models of Invertebrates and some Minerals’ and asks Cheeseman to pay the equivalent to Adams ‘whose receipt for it will be the same as mine’ and who can then send it on to the creditors in Australia. An invoice from Ward to Auckland Museum (Fig. 9) shows that purchase of the minerals came to \$86.43. As per Ward’s catalogue (Ward 1878) the total cost of Auckland Museum’s seven glass models came to US\$14.64 (Table 3). After the adoption of the gold standard in 1816, for most of the late 19th C and early 20th C the British Pound Sterling equivalent of the US dollar was £1 to US\$4.85 (Wikipedia 2019). The cost of the minerals (\$86.43) and glass models (\$14.65)

came to \$101.08 which converts to an equivalent 1885 value of £20. This suggests that all seven models were brought by Adams.

However, it was always Cheeseman’s intention to order more as on 29 April 1885 (MUS-1996-6-2: 278) he wrote to Ward in reference to further models: ‘Before long, I think that we shall send you a considerable order for them – but in the meantime I should be obliged if you could let me know whether notice is required before an order can be fulfilled – I see something in his catalogue to that effect, and if so, how long one would have to wait for an order say to the extent of £50.’

Ward replied (MUS-1995-38-158) that the Blaschka models took a long time to produce and that for any order over £10 the wait was 6–10 months. Furthermore, that Leopold Blaschka expected to be paid ‘in full with the order (he expects that from every one)’. There was also a note of urgency to Ward’s tone: ‘Blaschka and his son alone in the world do this work. He is old and [seems?] in poor health. Order now whatever you want. I will advance the money and see them delivered, splendidly packed, to your London Ag[en]t, or to Steamer. Cost as per my catalogue – nothing later.’

Sadly, despite Ward’s generous terms, Cheeseman yet again had to delay. On 17 August 1885 he wrote to Ward (MUS-1996-6-2: 324): ‘Many thanks for your information re Blaschka’s Glass Models. I shall have to defer ordering some until next year, as the money that I was counting upon for the purpose will be required for another object. I hope then to go in for £40 or £50 worth.’ On 26 February 1887 (MUS-1996-6-2: 480) he again wrote of deferring purchases as ‘in fact we are reserving funds for an enlargement of the Museum Building, which is now very urgently required.’ Unbeknown to Cheeseman, he was running out of time as by 1890 the Blaschkas had signed a contract with Harvard University to make only flowers. After this, Cheeseman would not have been able to purchase more of their invertebrate models.

Table 3. Blaschka glass models of marine invertebrates supplied to Auckland Museum in 1885 by H.A. Ward.

Currently accepted name	Ward Catalogue name	Ward Catalogue No.	Purchase price US\$	AIM Reg. No.
<i>Anemonia sulcata</i>	<i>Anthea cereus</i> var. <i>alabastrina</i>	Blaschka #37*	\$0.80	MA125474
<i>Bolocera tuediae</i>	<i>Bolocera tuediae</i>	Blaschka #42	\$3.00	MA125475
<i>Antholoba achates</i>	<i>Sagartia fuegiensis</i>	Blaschka #90	\$2.00	MA125476
<i>Sarsia frutescens</i>	<i>Syncoryne frutescens</i>	Blaschka #183	\$3.00	MA125477
<i>Coryphella verrucosa</i>	<i>Aeolis rufibranchialis</i>	Blaschka #370	\$0.60	MA125478
<i>Platydoris striata</i>	<i>Doris striata</i>	Blaschka #428	\$1.25	MA125479
<i>Ocythoe tuberculata</i>	<i>Philonexis</i> [ <i>Octopus</i> ] <i>catenulatus</i>	Blaschka #585	\$4.00	MA124293; Fig. 7

\* There is no name with the specimen, but it looks similar to *Anthea cereus* var. *smaragdina*, a named specimen in the Corning Museum of Glass collection (Ruggiero 2016), except that it is almost colourless.



Figure 7. Blaschka glass model of the octopus *Ocythoe tuberculata* Rafinesque, 1814 (*Philonexis (Octopus) catenulatus* Philippi, 1844; Blaschka #585; MA124293). Though typically fragile, this cold-painted specimen is the largest and most handsome of the Blaschka models in Auckland Museum's collections.

### Glass eyes, 1885

Besides specimens, Cheeseman sought materials and supplies unavailable locally that Ward could provide from America. These included glass eyes for stuffed animals and printed geology labels.

On 22 June 1885 (MUS-1996-6-2: 291), Cheeseman explained a problem. 'I write this month to ask a favour of you. Some time ago, as our stock of birds' eyes was getting low, I wrote to our agents in London ordering a fresh supply.' The agent was bankrupt and the order was returned. 'As we are in a hurry for the eyes – being almost cleaned out – and as it will save at least six weeks to get them from America, perhaps you would not object to get the enclosed order fulfilled for us, packed and sent fully addressed to me to the care of [my agent] Mr Hugh Craig, 482 California Street, San Francisco.' Cheeseman wanted 'a good quality of eyes'. 'As I don't know how you size them, I have enclosed a [British] trade list with illustrations of the sizes wanted which I have marked in red ink.'

Auckland Museum has a letter from Ward to Craig (21 August 1885, MUS-1995-38-158) with a three-page estimate of cost of many sizes of glass eyes from the maker Demuth Brothers of 89 Walker Street, N.Y. – 'Manufacturers of scientific glassware, buttons, beads, fruits and drops for artificial flowers, Christmas balls and frostings, artificial eyes, jet goods, physical instruments, etc.'. Unfortunately, the prices Cheeseman had from the British dealer (in Birmingham) were much lower than what Ward could get discounted from his 'best Eye-Maker in New York'. A later letter from Ward (16 October 1885, MUS-1995-38-158) made clear that at Craig's suggestion Ward sent half the order immediately.

Cheeseman was grateful (8 December 1885, MUS-1996-6-2: 361–2):

'I ought to have written before this to acknowledge the safe arrival of the birds' eyes, but have been unusually busy lately. Many thanks for your

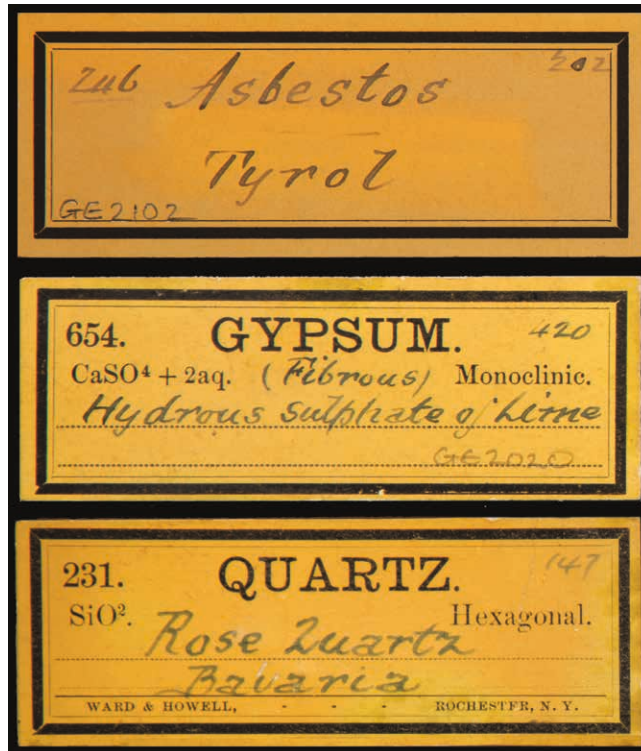


Figure 8. Three examples of display labels for minerals in the James R. Gregory Collection (1873) as used in the Princes Street Museum. *Top to bottom*: Asbestos (GE2102), blank Ward label; Gypsum (GE2020), pre-printed Ward & Howell label; Quartz (GE2046), Ward & Howell label. Labels received from H.A. Ward, 1886.

**Ward's Natural Science Establishment,**  
No. 2 College Avenue (opposite University).

Minerals, Rocks, Fossils, Casts of Fossils, Geological  
Relief Maps, Models and Diagrams, and  
Archaeological Specimens. Skins and Skeletons of Animals, Invertebrates (Crustaceans,  
Shells, Corals, etc.), Glass Models of ditto, Anatomical Models,  
Human Skeletons, Skulls and Skeletons of Bones, etc.,

WARD & HOWELL. H. A. WARD, A. M.

Rochester, N.Y. Jan. 6<sup>th</sup> 1886.

Prof. J. H. Cheeseman, Auckland Museum, N.Z.

J. Ward & Howell, D<sup>rs</sup>

Payment is requested in New York draft, or Postal Order. If local check is sent, add cost of exchange.

1884	Dec. 1 <sup>st</sup>	Welcome Nugget	15	—
	"	Siberian Nugget	10	—
	"	Eldorado "	2	25
	"	Platinum "	2	25
	"	Diamond Models	35	—
	"	Fluorite .75 Apatite 1.-	1	75
	"	Hematite .50 Quartz .50	1	—
1885	July 14 <sup>th</sup>	212 Mineral Labels @ 25	7	—
1886	Jan 6 <sup>th</sup>	350 " " " "	7	10
	"	2000 Blank " " 5.00	7	—
	"	Postage	1	08
Recd through H. A. Ward			\$ 86.43	15.45
			15.45	
			<u>\$ 70.98</u>	

Figure 9. An invoice (dated 6 January 1886) to Auckland Museum from Ward & Howell for replica gold and platinum nuggets, replica diamonds, minerals and specimen labels supplied in 1884-1886. MUS-1995-38-158; scanned by Susan Tolich.

kindness in attending to the matter. As you mentioned in your letter to Mr Craig, which he sent on to me, I did not expect that there would be such a great difference between the price in England and the price in America, and my object was to save time in getting them out. I hope Mr Craig has paid you all the charges on the consignment.'

### Geology labels, 1885–1886

Because of the difficulty in getting suitable labels made in New Zealand and wanting high-quality labels for display, Cheeseman was interested in Ward labels and Ward & Howell labels (the latter from a joint venture of Ward's and marked 'Ward & Howell'). Specimens which form part of the James R. Gregory Collection acquired in 1873 are good examples (Fig. 8). In Auckland Museum's Geology Collection many minerals that were displayed at the Princes Street Museum still have Ward blank or pre-printed labels.

Cheeseman wrote to Ward about labels on 29 April 1885 (MUS-1996-6-2: 278): 'I notice that you supply printed labels for your minerals. It has occurred to me that you probably have these struck off in considerable numbers, and that possibly you might not object to sell me some sets – say a dozen or more. They are so much better for collections than written ones to say nothing of the time saved. I return one of the labels so that you may see what is meant. Judging from the [printed label] numbers, I suppose the sets correspond to Dana's Mineralogy [e.g. Dana c. 1880].' In reply (26 June 1885, MUS-1995-38-158) Ward stated that he had mineral labels of '400 to 500 Kinds or species' at a cost of 1c each and that he would send a sample set.

On 8 December 1885 (MUS-1996-6-2: 361–2) Cheeseman acknowledged receipt of a parcel of about 220 mineral labels and listed the additional labels he required. 'Also if you have, or could get struck off for me, some blank ones of similar size and colour, with only the black line round the margin, it would be a favour. I should like a good parcel of them – say a couple of thousand or so. I have failed in getting them made here, as our printers have not the right kind of cardboard.'

Ward wrote on 6 January 1886 (MUS-1995-38-158) with a separate invoice listing geological specimens and labels supplied and a tally of costs (Fig. 9). As per Cheeseman's order, two packages of labels went by post (to San Francisco for steamer to Auckland). Two or three types were out-of-stock but would follow in a letter. Ward requested payment for the full amount of the invoice (\$70.98) so that (Ward quotes) 'old things shall have passed away and all (future) things shall become [new or now]'.

### Mineral specimens, 1885

Cheeseman sought help from Ward in developing Auckland Museum's mineral collection (28 April 1884, MUS-1996-6-2: 198–201):

'Looking over your catalogue of minerals, of date 1878, I see you advertise a set of 15 models in cut glass of celebrated diamonds. This I should like to have; also the facsimile nuggets mentioned (the

Welcome nugget from Australia, the Siberian nugget, one from Oregon Canon [Cañon], California, and the Platinum nugget from the Ural Mts.). We are thinking of adding to our type collection of minerals in a short time, so that if you could send with the above two or three specimens (with mountings, labels, etc) showing the sort of specimens you supply for Museum sets, I should be much obliged.'

The arrival of these replica specimens at the Museum was reported in the Annual Report (Anon. 1885) but none has been found in the collections to date. The catalogue referred to is probably Ward and Howell's *Catalogue of Minerals* published in 1878. We have not seen a copy of this catalogue but the same replica specimens of gold and platinum are also listed in the Ward Catalogue (1866: 209) under 'Miscellaneous'.

In the same 1884 letter, Cheeseman asked Ward to send 'two or three really good rhombs of Iceland Spar and crystals of Tourmaline'. The Iceland Spar (well formed rhombic crystals of calcite) and the tourmaline may well be in the collections since Auckland Museum has specimens which fit this description but they have lost their original data and any linkage to Ward. The Ward replica diamonds, said to be of 'all the noted Crown Diamonds' including the Great Mogul, Orlov, Koh-i-Noor, Nassack, the Hope Diamond etc., have not been found.<sup>[2]</sup> In the Applied Arts collections (1932.233) Auckland Museum has a collection of imitation diamonds made in the Netherlands and said to be pre-1885. But this is a much larger set than the Ward one and relates to a later acquisition by the Mackelvie Trust Board Collection in 1932.

### The early 1890s

There was a gap in correspondence for three years before 1890. Ward wrote on 3 March 1890 (MUS-1995-38-158) 'It seems to me a very long time since we have corresponded'. He would be glad to fill any order and requested from Cheeseman 'well-preserved Marine Invertebrates (notably Sponges or Echinoderms)' and skulls and skeletons of cetaceans. Cheeseman's reply (13 June 1890, MUS-1996-6-2: 728–9) is only partly legible but the things he could provide included skins and skeletons of New Zealand birds (including two species of kiwis) and New Zealand shells (marine molluscs) 'say a named collection of 100 species'. The next letters we have seen are 1897, so it is not clear if an exchange took place in the early 1890s.

### Rosetta Stone: the 1897 exchange

Ward must have visited Auckland Museum a second time, in November 1896. On 27 May 1897 (MUS-1995-38-158), he signed off his letter 'With heartiest recollections of our most pleasant visit together last November.' An exchange must have been negotiated during this visit, for Ward wrote on 27 May 1897 (MUS-1995-38-158) 'The specimens which I got from your Museum as well as others from New Zealand have safely arrived in good condition. I believe that I was owing you the sum of £18.6.6.' Ward had shipped to Cheeseman (in two boxes

by railway freight to San Francisco shippers who would redirect by steamer) ‘a mounted skeleton of an Ostrich [now numbered LB3885] and a cast of the Rosseta [*sic*] Stone [now Ethnology 11131; first mentioned in the 1866 Ward Catalogue as #1237, p. 210]’. On 26 November 1897 (MUS-1996-6-4: 58) Cheeseman apologised for his late reply but acknowledged safe receipt of these items which were ‘in exchange for the Apteryx skins etc. from this Museum’.

Later in the year (26 November 1897, MUS-1996-6-4: 58) Cheeseman asked for the price of mounted groups of mammals, for example ‘containing a Lion, Lioness, Tiger, Leopard, and perhaps Panther’. On 10 June 1898, he wrote to F.A. Ward (MUS-1996-6-4: 131) thanking him for sending prices of stuffed mammals but Cheeseman was ‘not in a position to forward you an order just at present’. He had also received prices for ‘coloured casts of fish and reptiles’ and offered to send ‘specimens of New Zealand things in exchange’. However, there is no evidence that Auckland Museum received any of these items. The museum instead purchased mammal groups from the London firm Gerrard & Sons in 1904–1907 (Gill 1999, 2006).

### Comments on the tuatara

The Cheeseman-Ward correspondence contains references to the tuatara (*Sphenodon*), the reptile group unique to New Zealand. There is no indication Cheeseman sent any to Ward, but Ward collected his own specimens in March 1881 at the Rurima Rocks in the Bay of Plenty (*Bay of Plenty Times* 16 April 1881). Ward added a postscript to a letter of 6 January 1886 (MUS-1995-38-158): ‘I lately had offered to me in New York by a party named Bills from Dunedin a cask containing 160 adult Tuataras for £50. I did not have money to spare for all of 3 or 4 things then offering me as bargains; so I did not buy.’ Cheeseman replied (1 March 1886, MUS-1996-6-2: 374–5): ‘You ought to have accepted Bell’s [*sic*] offer of the Tuataras. I don’t think that it is at all likely that such a chance will occur again, for it is probable that our Government – on the representations of some scientific men – will prohibit such wholesale exportations in the future. Otherwise the Tuatara will soon be a thing of the past.’

On 8 December 1905 (MUS-1996-6-4: 635), just seven months before Ward died, Cheeseman, in response to a letter of 24 October 1905 (missing) and referring to tuatara specimens in alcohol, said that he ‘could spare say half a dozen’. These were sound but had been ‘on hand for some time’. ‘They should make good skeletons – but the bones would probably be a little brown, as you say. Possibly there are ways of bleaching such skeletons with which your son will doubtless be familiar. As to their value, I usually expect to get from £1 to £1-10-0 each for such specimens, according to size.’ Not receiving any reply, Cheeseman exchanged the specimens with another party (9 May 1908, TFC to C.H. Ward, MUS-1996-6-4: 857–8).

## DISCUSSION

Thomas Cheeseman kept up a prolific correspondence over nearly five decades and arranged many exchanges of specimens with natural history dealers and natural history museums both in New Zealand (e.g. William Smyth; Crane and Gill 2018) and overseas (e.g. Florence Museum; Gill 2010). In this context, Cheeseman became a long-term friend and correspondent of H.A. Ward despite Auckland Museum, with limited budgets, remaining a minor customer of Ward’s establishment. Large moa skeletons were worth £50 in the late 1800s (Berentson 2012: 151). Cheeseman had none of these to exchange and had to fall back on kiwi specimens at £1 apiece. Canterbury Museum had extensive moa collections and exchanged surplus moa bones with H.A. Ward. In return the museum received the large Canyon Diablo meteorite (*Christchurch Press*, 15 December 1900: 19) which now has a very high monetary value; Auckland Museum, for its small exchanges, got plaster casts. However, the casts of ‘celebrated’ fossils, many of them large and spectacular, were welcome at Auckland Museum which had galleries to fill. Many of the fossil casts have been displayed continuously in the museum since their receipt in 1882, first in the Princes Street museum, and then from 1929 in the current museum building.

Purchasing an articulated human skeleton from Ward’s was just another routine transaction as Cheeseman developed his encyclopaedic museum. It is of display quality and was presumably shown in the public galleries, although we have no confirmation of this from any surviving photographs or documents. In requesting specifically (though unsuccessfully) a skeleton of an indigenous North American, Cheeseman perhaps thought that material from a Pacific-Rim population would have best relevance for New Zealand from among the geographically localised skeletons offered in Ward’s catalogue. In 1885 Cheeseman asked E.H. Giglioli in Florence for skulls of ‘European or Asiatic races’ (Gill 2010). Clearly, like many museums at the time, he was trying to build a world-wide comparative collection of human osteology.

Besides specimens and museum requisites like geology labels and glass eyes for taxidermy, Ward also supplied Auckland Museum with important assistance and advice. He facilitated the employment of the preparators Charles De Kempeneer (Gill 2018) and Charles Adams (Gill 2004, 2014). It was probably Charles Adams’ influence that led Auckland Museum to produce its first natural history ‘habitat groups’ showing tuataras, keas and wekas in realistic and naturalistic display contexts (Gill 2004).

Much has already been written about the history of the famous Blaschka glass models and the father-and-son team, Leopold and Rudolf Blaschka (1822–1895 and 1857–1939 respectively), who made them (e.g. van Giffen et al. 2010; Miller and Lowe 2008; Whitehouse 2007). The Blaschkas made as many as 10,000 glass marine invertebrate models covering some 700 species (Whitehouse 2007) from 1863 until 1890, when they

signed an exclusive contract with Harvard University to make glass flowers for that institution. At the time of Cheeseman's first enquiry in September 1882, the Blaschkas were already well-known for the excellence of their work and their models had been distributed all over the world (Whitehouse 2007), including New Zealand. When the Otago Museum opened in 1877 it did so with a display of Blaschka models as part of its new galleries (Crane 2015). Julius von Haast, Cheeseman's counterpart at the Canterbury Museum, ordered a substantial set for that Museum in 1882 (Shaw et al. 2017). The invertebrate models were sold either directly or through an agent, such as H.A. Ward, and mainly to museums, universities, colleges and other institutions for the teaching and display of natural history. While F.W. Hutton (curator at Otago Museum) and Haast, dealt directly with Leopold Blaschka, Cheeseman placed his order via Ward.

Ward's promise to Cheeseman to 'advance the money' and his 'Cost as per my catalogue – nothing later' seem very generous, given that this may well have met with resistance from his uncle, Levi Alfred Ward, who was one of his underwriters (Dyer 2008). After years of travel and study Ward set up his company, Ward's Natural Science Establishment, in 1860, with the financial help of Levi Alfred, and possibly his grandfather Levi Ward (Kohlstedt 1985). However, it seems that all through the 1800s the company experienced cash flow problems (Dyer 2008). Ward was said to have been more interested in collecting than the business-end of things, treating the company he founded as 'more a vehicle for roaming the world for collecting the natural specimens he loved' (Gamble 1962 in Dyer 2008). In fact he went bankrupt twice, once in 1874 and again in 1884 (Kohlstedt 1985), and in 1884 his cousin Frank Addison Ward (Levi Alfred Ward's son) was appointed as treasurer to the business. Blaschka glass models first appeared in Ward's catalogue of 1878 and he seems to have reached his business arrangement with the Blaschkas without his uncle's knowledge or approval (Dyer 2008). As a consequence the latter was unwilling to send money to Blaschka in prepayment of models.

In general, the letters between T.F. Cheeseman and H.A. Ward show the effort both men put into correspondence and exchanges. There was an interaction in which a small colonial museum supplied 'exotic' local material and a powerful metropolitan enterprise supplied 'classic' specimens, museum consumables and trained young men to be engaged as preparators. Our study makes a case history of how museum men in the Victorian era used their personal efforts and exchanges of specimens for mutual enrichment of their respective organisations.

## ACKNOWLEDGEMENTS

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## END NOTES

1. Cheeseman's 1881 listing of items to be received from Ward states 'Aepyornis maximus. Metatarsus and one egg with mounting.' Ward's catalogue (Ward 1866) shows that he sold the elephant bird tarsometatarsus with either one or two eggs (lengths and widths given) with mountings. Auckland Museum has two brass and wood (black walnut?) egg mountings of the type shown in Ward's catalogue and several large plaster eggs. The single egg that Cheeseman received in the 1882 consignment is assumed to be the one now numbered LB4002 (not previously registered) because at 330 x 233 mm it matches one of the sizes given in Ward's catalogue (13 x 9 inches). Two old catalogue cards, made out by Cheeseman's assistant L.T. Griffin after 1924, list *Aepyornis* specimens—AV1128.1 (cast of egg) and AV1128.2 (cast of lower portion of metatarsus)—but without further details. AV1128.1, now renumbered LB4000, is 244 x 178 mm and therefore too small to be one of the eggs in Ward's 1866 catalogue. To explain the presence of two Ward-style egg mountings it is possible that Ward in fact sent two eggs in 1882, or sent a second egg subsequently, or that the museum at some stage received a second Ward egg from a third party.
2. In 2015 a set of 15 Ward & Howell 'Imitations of Noted Diamonds' sold at auction in the U.S.A. for US\$1,750 (<https://www.cottoneauctions.com/lots/33346/ward-howell-imitations-of-noted-diamonds>; accessed 2019).

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