

# Appendix A: Glossary of Japanese Terms

<i>Ainu</i>	indigenous people who lived in Hokkaido, as the <i>Meiji</i> government invested in the Hokkaido so the Ainu were pushed into more remote areas. See Isabella Bird's <i>Unbeaten Tracks in Japan</i> for her brief experience of living with them.
<i>Bakufu</i>	the government under the <i>Shogun</i> , which ruled Japan until 1868.
<i>Choshu</i>	the clan or <i>han</i> , in present day Yamaguchi Prefecture, which played a decisive role with others, including <i>Satsuma</i> , in opposing Shogunal power in the 1860s. <i>Choshu</i> men were influential in the <i>Meiji</i> government.
<i>daimyo</i>	Feudal lord who held land assessed at 10 000 <i>Koku</i> or more. There were three categories, <i>shinpan daimyo</i> who were hereditary vassals of the <i>Tokugawa</i> clan, <i>fudai daimyo</i> who had no blood ties with the <i>Tokugawa</i> family but who had been serving it before it obtained the position of <i>shogun</i> , and <i>tozama daimyo</i> who fitted neither of the other two categories. Unrest from the followers of the <i>tozama daimyo</i> resulted in the fall of the <i>Tokugawa</i> Shogunate and the Restoration of the Emperor in 1868.
<i>Dajokan</i>	the executive council of the early <i>Meiji</i> government.
<i>Edo</i>	the name of the <i>Tokugawa</i> capital, renamed Tokyo.
<i>'fukoku-kyohei'</i>	a slogan meaning 'enrich the country, strengthen the army'. It was used by those who wished to use Western methods to strengthen Japan against the West.
<i>genro</i>	elder statesmen, name given to those few who became influential but unofficial advisers to the <i>Meiji</i> Emperor.
<i>gunken seido</i>	the prefectural system.
<i>haihan-chiken</i>	the abolition of the domains, <i>han</i> , and the establishment of prefectures, <i>ken</i> , a change made by the <i>Meiji</i> government in 1871.
<i>han</i>	land held by a <i>daimyo</i> , translated as domain, fief or clan.
<i>hanseki-hokan</i>	the enforced surrender of <i>daimyo</i> lands and populations to the Emperor which the <i>Meiji</i> government carried out in 1869.
<i>hatamoto</i>	<i>Tokugawa</i> retainers, upper and middle <i>Samurai</i> , ranked immediately below <i>fudai daimyo</i> .
<i>heimin</i>	commoner, generally a person below the rank of <i>samurai</i> in the <i>Meiji</i> period.

<i>Hizen han</i>	also known as <i>Saga</i> , contained active reformers (now <i>Saga</i> prefecture, <i>Kyushu</i> ).
<i>hoken seido</i>	feudal system.
<i>Koku</i>	measure, especially of rice, the equivalent of 4.96 bushels or 180 litres, used in land assessment.
<i>Kokugaku</i>	'National learning' intellectual school emphasising Japanese traditions, especially <i>Shinto</i> .
<i>Kuge</i>	nobles of the imperial court.
<i>naiyu-gaikan</i>	'troubles at home, dangers from abroad' suggests domestic unrest and foreign attack simultaneously, a Chinese formula for disaster.
<i>osei-fukko</i>	'the restoration of imperial rule', the term used prior to 1868 by those who wished to reinstate the Emperor.
<i>oyatoi gaikokujin</i>	term used for 'government foreign employees' in the <i>Meiji</i> period, the short form was ' <i>Yatoi</i> ', literally 'hired menial'.
<i>Rangaku</i>	Dutch studies; Western studies through Dutch books and contacts in the <i>Tokugawa</i> period.
<i>ronin</i>	<i>samurai</i> who were no longer tied to their feudal lords and were therefore leaderless.
<i>ryo</i>	unit of gold currency equal to 60 <i>momme</i> of silver, replaced by the <i>yen</i> after the Restoration.
<i>Saga han</i>	also known as <i>Hizen</i> , q.v.
<i>Samurai</i>	feudal retainer. There were several ranks within this category, but used here as a generic term; their pensions were commuted and finally abolished by the <i>Meiji</i> government.
<i>Sanke</i>	<i>Kii</i> , <i>Owari</i> and <i>Mito</i> , the three senior branches ( <i>shinpan daimyo</i> ) of the <i>Tokugawa</i> family.
<i>Satsuma han</i>	led by the <i>Shimazu</i> family; became important point of entry, often through the capital <i>Kagoshima</i> , of foreign innovation, eventually played leading role in the <i>Meiji</i> Restoration of January 1868 (now <i>Kagoshima</i> prefecture).
<i>Satsuma-Choshu Alliance</i>	a military coalition (1866) against the <i>Tokugawa</i> Shogunate by <i>Satsuma</i> and <i>Choshu</i> domains. As a result of 'Satcho' determination the Shogunate was ended late in 1867. These men became the oligarchs of the <i>Meiji</i> government.
<i>Shizoku</i>	a term used after 1868 instead of <i>samurai</i>
<i>Shogun</i>	properly <i>sei-tai-shogun</i> , 'the barbarian-subduing generalissimo', the Emperor's military deputy, who ruled Japan before 1868.
' <i>Sonno-joi</i> '	'Honour the Emperor, expel the barbarian'; slogan used after the foreign treaties of 1858 when the foreigner had gained a foothold in Japan through the treaty ports.
<i>Tosa han</i>	men from <i>Tosa</i> supported moves to restore the Emperor (now <i>Kochi</i> prefecture, <i>Shikoku</i> ).

*yashiki**han* or clan residences, consisting of land and buildings, often spacious inner-city sites.*yen*

unit of Japanese currency, intended as equivalent of US dollar in 1871, although its value declined.

# Appendix B: Biographical Details of Japanese Leaders during the *Meiji* Period

ENDO Kinsuke, *Choshu*, one of original 'Choshu Five'; studied in London at UCL in mid-1860s.

ENOMOTO Takeaki (1836–1908) student of naval science under Dutch at Nagasaki, later in Holland, 1862; held senior *Bakufu* naval post in 1867; resisted Restoration and fled to Hokkaido, 1868–9; pardoned in 1872 and appointed to government office, attained cabinet rank.

ETO Shimpei (1834–74), low-ranking *samurai* of *Hizen* clan, although member of early *Meiji* government-led revolt in *Saga* clan after Korea dispute in 1873; executed.

FUKUZAWA, Yukichi (1835–1901) influential educator and populariser of Western ideas, of *Nakatsu* domain, founder of *Keio Gijuku*, now *Keio* University, of the newspaper *Jiji Shimpō* and of the art of public speaking. Fukuzawa, stifled by the 'narrow stiffness' of clan life, made strenuous efforts as a young man to familiarise himself with Western learning. He not only learnt Dutch and later English, but succeeded in 1860 in joining the first Japanese expedition to America, followed in 1862 by a further mission to Europe during which he visited France, England, Holland, Russia and Portugal. On his return he published *Seiyo Jijo (Conditions in the West)* which made his reputation as an interpreter of foreigners and their countries to the Japanese. Throughout his life he continued to educate his fellow-Japanese in the ideas behind Western progress, particularly the importance of science and the spirit of independence.

GODAI Tomoatsu (1836–85) *Satsuma* clan; studied naval science under Dutch at Nagasaki; advocated 'enrich country, strengthen army' (*fukoku-kyohei*); led *Satsuma* mission to Europe with Terajima Munenori, 1865–6; later, entrepreneur who developed interests in transport, mining and textiles; became leader of *Osaka* business community.

GOTO Shojiro (1838–97) *Tosa* clan; related to Yoshida Toyo; became active leader and intriguer in the years leading to Restoration; senior member of early *Meiji* government; later engaged in business enterprises and party politics.

HITOTSUBASHI Keiki, see *Tokugawa Keiki*.

II Naosuke (1815–60); *Fudai daimyo*, *Tairo* or regent between 1858 and 1860, and therefore responsible for the 1858 treaties with the foreign powers; assassinated.

INOUE Kaoru (1836–1915), *Choshu* middle-ranking *samurai*; one of the original 'Choshu Five', studied in London, UCL, 1863–4; held senior posts in *Meiji* government, finance expert and later *Genro*; close links with Ito Hirobumi.



- INOUE Masaru (1843–1910) *Choshu*; one of original 'Choshu Five' in London; studied at UCL 1863–4; became Chief of Japanese railways until 1893.
- ITO Hirobumi (1841–1909); *Choshu* clan; student of Yoshida Shoin; made *Samurai* in 1863; one of original 'Choshu Five'; studied in London, 1863–4; regarded as 'Western' expert; became influential as government minister, Prime Minister and *genro*.
- IWAKURA Tomomi (1825–83), also known as Tomoyoshi; middle-rank court noble; although initially hostile to change later associated with *Satsuma*, especially *Okubo Toshimichi*; after Restoration, key-member of *Meiji* government; led Iwakura Mission, 1871–3, and later became a senior minister and influential adviser.
- IWASAKI Koyata (1879–1945) nephew of Yataro; studied at Tokyo and Cambridge Universities (Pembroke College); returned to Japan in 1906 and became Vice-President of Mitsubishi, then in 1916, President. He separated various parts of the business into Mitsubishi Shipbuilding (1917) (now Mitsubishi Heavy Industries Ltd), Mitsubishi Mining (now Mitsubishi Mining and Cement Co. Ltd) and Mitsubishi Corporation (1918) and Mitsubishi Bank Ltd (1919).
- IWASAKI Yataro (1835–85) of *Tosa han*, founder of the Mitsubishi industrial and commercial empire, passed a fruitful apprenticeship manipulating business deals for *Tosa han*, learnt how to take advantage of unsettled early *Meiji* years, founded Mitsubishi Shokai trading company 1873, largely engaged in shipping. His aggressive tactics and careful cultivation of friendships within government paid off.
- IWASAKI, Yanosuke, younger brother of Yataro who took over Mitsubishi in 1885.
- KAWADA, Koichiro, influential member of triumvirate which took over Mitsubishi in 1885 on founder's death, his son Riokichi served long apprenticeship at Lobnitz shipyard on the Clyde.
- KIDO Takayoshi (1833–77), *Choshu*; student of Yoshida Shoin; leader of *Choshu* from 1862; effective leader from 1865; important member of early *Meiji* government.
- KOMATSU Tatewaki (1835–70), *Satsuma* ally of *Okubo Toshimichi*, senior member of early *Meiji* government.
- MATSUKATA Masayoshi (1835–1924) *Satsuma*; modest official career in *Satsuma* before 1868; posts in local and central government; became financial expert responsible, after 1881, for severe deflationary policies, later Prime Minister and *genro*.
- MASUDA Takashi (1848–1938) leader of Mitsui financial combine; organised trading company with Inoue Kaoru; taken over 1876 by Mitsui.
- MATSUKI Koan, see *Terajima Munenori*.
- MEIJI Emperor (1852–1912) given name Mutsuhito; chose name of *Meiji* era meaning 'enlightenment'; son of Komei, succeeded to throne, 13 February 1867; originally manipulated by young revolutionaries; later became an influential figure.
- MITSUI family, their business concerns had been powerful during the *Tokugawa* period from 1600 to 1868, but reorganised in the *Meiji* period. The Mitsui Company was founded as a general trading company in 1876.

One of the major components in the Mitsui business empire was, and is, the Mitsui Bank.

MORI, Arinori (1847–89), a prominent spokesman for Western ideas; primarily a diplomat and educationalist; as the Minister for education, despite his Western proclivities he imposed an élitist and statist system on Japanese education; assassinated by a *Shinto* fanatic, 11 February 1889 (see Chapter 8).

NABESHIMA Naomasa (1814–71) *Tozama daimyo* of *Hizen* or *Saga* clan; patron of technological change; held senior posts in early *Meiji* government.

NISHI Amane (1829–97) student of *Rangaku*; studied in Leiden, 1862–5; later became *Meiji* bureaucrat, specialist in Western law, military administration and philosophy.

OKUBO Toshimichi (1830–78) also known as Ichizo; *Satsuma*; key figure in early *Meiji* government until assassinated.

OKUMA Shigenobu (1838–1922) *Hizen* clan; student of *Rangaku*, then of English; influential in domain affairs before 1868; cabinet minister and Prime Minister; founder of Waseda University; never travelled abroad.

OKURA Kirachiro, founder of Okura & Co. Ltd in Tokyo in 1873; opened in London in 1874.

SAIGO Takamori (1828–77) *Satsuma* leader before Restoration, *Meiji* leader after, but had stormy career; led *Samurai* revolt 1877; committed suicide on battlefield.

SAKAMOTO Ryoma (1835–67) *Tosa* clan; active in bringing about *Satsuma–Choshu* alliance; assassinated.

SANJO Sanetomi (1837–91) also known as *Saneyoshi*; Court noble; fled to *Choshu*, 1863; later became a senior minister in the *Meiji* government.

SHIMAZU Hisamitsu (1817–87) also known as *Saburo*; effective head of *Satsuma* during 1860s; supported Okubo Toshimichi and Saigo Takamori, but conservative after 1868.

SHIMAZU Nariakira (1809–58) *Tozama daimyo* of *Satsuma*; reformer, encouraging imports of Western technology.

SHODA, Heigoro (1847–1922) originally trained at Keio, under Yukichi Fukuzawa; transferred to Mitsubishi and married one of Yataro Iwasaki's daughters; became general manager of Mitsubishi in 1886; shipbuilding expert.

SOEJIMA Taneomi (1828–1905) *Hizen*; student of *Rangaku*, later English; diplomatic specialist; represented Japan overseas; later became a cabinet minister.

TERAJIMA Munenori (1832–93) earlier known as *MATSUKI* Koan; *Satsuma*; studied medicine and *Rangaku*; doctor and adviser to Shimazu Nariakira; led influential *Satsuma* Mission to Europe 1865–6 with Godai Tomoatsu; senior diplomatic posts in *Meiji* government; Foreign Minister 1873; Vice-president of Privy Council 1891.

TOGO Heihachiro (1848–1934) *Satsuma*; Fleet admiral in IJN, commanded at Battle of Sea of Japan or Tsushima, 27–28 May 1905 when IJN destroyed Russian Baltic Fleet.

TOKUGAWA Keiki (1837–1913) earlier known as *Hitotsubashi* (q.v.) also *Yoshinobu*; succeeded as *Shogun*, January 1867, fifteenth and last of *Tokugawa* line.

YAMAGATA Aritomo (1838–1922) *Choshu*; outstanding figure of late *Meiji* period; Prime Minister and *genro*.

YAMAO Yozo (1837–1917) *Choshu*, one of the original 'Choshu Five'; educated in London at UCL, and also at Glasgow; influential in *Meiji* government particularly on technical development and education.

YOSHIDA Toyo (1816–62) also known as *Genkichi*; *Tosa* reformer, influential figure advocating modernisation, assassinated.

# Appendix C: Academic Societies and Journals Founded in Meiji Japan

Founding dates	Japanese	Names of Societies	English	Titles of journals	Founding dates of journals
1873	<i>Meirokeisha</i>		6th year of Meiji Society	<i>Meiroku Zasshi</i>	1874
1877	<i>Tokyo Sugaku Kaisha</i>		Tokyo Mathematical Society	<i>Tokyo Sugaku Kaisha Zaasshi</i> <i>Gakugei Shirin</i> published by University of Tokyo, translations of articles in Western Journals <i>Nihon Kagaku Kaishi</i>	1878 1877
1878	<i>Tokyo Kagaku Kai</i>		Tokyo Chemical Society		1880
1878	<i>Tokyo Seibutsu Gakkai</i>		Tokyo Biological Society		1881
1879	<i>Ko Gakkai</i>		Engineering Society	<i>Kogaku Shoshi</i>	1879
1879	<i>Tokyo Gakushi Kaitin</i>		Tokyo Academy	<i>Tokyo Gakushi Kaitin Zasshi</i>	1879
1879	<i>Tokyo Chigaku Kyokai</i>		Tokyo Geographical Society	<i>Tokyo Chigaku Kyokai Hokoku</i> Memoirs of the Science Department, University of Tokyo, Japan	
1880	<i>Nihon Jishin Gakkai</i>		The Seismological Society of Japan		

(continued)

Founding dates	Japanese	Names of Societies	English	Titles of journals	Founding dates of journals
(continued)					
1882	Tokyo Seibutsu Gakkai (1) Tokyo Shokubutsu Gakkai (2) Tokyo Dobutsu Gakkai	(1878) split into – Tokyo Botanical Society Tokyo Zoological Society Tokyo Anthropological Society Tokyo Mathematico-Physical Society		Tokyo Gakugei Zasshi intellectual journal; articles mostly by University of Tokyo professors	1881
1884	Tokyo Jinrui Gakkai			Shokubutsugaku Zasshi	1887
1884	Tokyo Sugaku Kaisha renamed Sugaku Butsuri Gakkai			Dobutsugaku Zasshi Jinruigaku Zasshi	1886
1885	Nihon Kiseichu Gakkai	Parasitological Society of Japan		Tokyo Sugaku Butsuri Gakkai Kiji	1885
1885	Nihon Kogyo Kai	Mining Society of Japan			
1886	Kenchiku Gakkai	Architectural Society			
1887	Tokyo Igakkai	Tokyo Medical Society		Journal of the College of Science, Imperial University, Japan.	
1888	Denki Gakkai	Electrical Society			
1893	Nihon Chishitsu Gakkai	Geological Society of Japan		Tokyo Butsuri Gakko Zasshi (published by Tokyo School of Physics)	1891
1902				Chishitsugaku Zasshi	1893
1904				Proceedings of the Tokyo Mathematico- Physical Society	1902
				Journal of the College of Engineering, Tokyo Imperial University, Japan	1904

Source: K. Koizumi, 'Japan's First Physicists', *Historical Studies in the Physical Sciences*, vol. 6 (1975), p. 104.

# Appendix D: Lectures Given to the Japan Society of Cambridge, 1888–92

<i>Date</i>	<i>Title of Lecture</i>	<i>Lecturer</i>	<i>Comments</i>
1888	The Character of the English Gentleman and English Public Schools	Professor Sir Donald Wade KCB (Kings)	
1889	The University life of an English Gentleman	Dr Donald MacAlister (St Johns)	
March			
1889	The Domestic Education of the English Gentleman	Dr J. S. Reid (Caius)	
August			
1890	The Influence of Christianity upon the Character of an English Gentleman	Rev. Professor B. F. Westcott DD (Kings) (now Lord Bishop of Durham)	
February			
1890	The Comity of Nations	Dr C. E. Searle (Master of Pembroke)	Mrs Searle entertained members of the Society to luncheon before the meeting
December			
1891	Ambition	Rev. A. H. F. Boughey (Trinity)	
1891	Science as a Training	Professor Alexander MacAlister (St Johns)	
June			
1891	Industry, Art and Character	Mr H. S. Foxwell (St Johns) but also Professor of Political Economy at University College, London	
November			
1892	Literature as Training	Dr A. W. Verrall (Trinity)	
March			
No date	English Gentlemen in the Past	Dr Butler (Master of Trinity)	
	The House of Commons	Sir Richard Jebb, MP (Regius Professor of Greek)	
	History and Ethics	Sir John Seeley (Regius Professor of Modern History)	
	The Sacredness of Property	Rev. Dr Cunningham	
	The English Gentleman in English Law	Dr E. W. Maitland	

*Sources:* *Transactions and Proceedings of Japan Society, London*, vol. VII (London, 1908) p. 49. *Japanese Club at Cambridge*, 7th, 8th, and 9th Meetings, GUL, Stack Education, R5 1916–C.

# Notes and References

Full publication details of authors' works to which reference is made here will be found in the Bibliography.

## 1 Diplomats and Consuls

1. See G. Fox, *Britain and Japan, 1858–1883*, Part I, Diplomatic Relations.
2. The 8th Earl of Elgin was also the 12th Earl of Kincardine. The author is indebted to Andrew, the Right Honourable Earl of Elgin and Kincardine, of Broomhall, Fife, Scotland, for permission to quote from the Bruce family papers. See S. G. Checkland, *The Elgins, 1766–1917*. J. L. Morison, *The Eighth Earl of Elgin*, and L. Oliphant, *Narrative of the Earl of Elgin's Mission to China and Japan*.
3. T. Walrond, *Letters and Journals of James, 8th Earl of Elgin*, p. 263. While in Japan Elgin wrote a long letter-diary to Louisa, his wife, which covered the whole of his Japanese trip. References here are to Walrond, where he quotes, or to the original letter-diary, hereafter *EL*, held by Lord Elgin, at Broomhall, Fife, Scotland.
4. For the text of the Treaty of Peace, Amity and Commerce between Great Britain and Japan, Edo, 26 August 1858, see *Meiji Japan through Contemporary Sources*, vol. 1, pp. 36–44.
5. The only British agreement which pre-dates that of Lord Elgin's treaty had been negotiated by Rear Admiral Sir James Stirling. For the text see 'Convention between Great Britain and Japan for Regulating the admission of British Ships into Ports of Japan', in *Meiji Japan through Contemporary Sources* vol. 1, pp. 4–5.
6. See M. E. Cosenza, *The Complete Journal of Townshend Harris*, and O. Statler, *Shimoda Story*.
7. Walrond, *Letters*, p. 265.
8. PP, 1859, vol. XXXIII (2571) pp. 1–6, Clarendon to Elgin, no. 16, 20 April 1857.
9. As Elgin wrote, 'I found that the Consul had contrived to make a pretty good treaty with Japan, evidently under the influence of the *contre coup* of our proceedings in China', *EL*, 12 August 1858.
10. Elgin sent a watch and chain, 'as a trifling acknowledgement of the very valuable assistance rendered by you to me', *EL*, 27 August 1858.
11. Walrond, *Letters*, p. 268.
12. Elgin was not to know that a bitter power struggle was going on in Japan and that only because Ii Naosuke (1815–60) *daimyo* of Hikone, and regent to the young Emperor, was in the ascendant was his mission so successfully and speedily completed. Ii paid the price for his complaisance, being assassinated in 1860.
13. *The Emperor*, an armed steam yacht of 4 guns built at Blackwall in

1856, was 370 gross tons, 135' × 22' with iron paddle; later renamed *Banryu* and *Raiden Maru*, served in Japanese navy as *Raiden* (1877–88). Later a whaler, broken up in Osaka in the late 1890s. See T. M. Milne, *Steam Vessels Sold to Japan*, NMM THS/13/2, p. 76. Admiral Fitzgerald also reported that *The Emperor* 'was a handsome little vessel . . . she was also thoroughly sea-worthy and had made her own way out to China via the Cape . . . The Japanese took kindly to her and showed great anxiety to learn how to work her themselves without any assistance from foreigners'; see P. Fitzgerald, *Memories of the Sea*, pp. 114–15.

14. Walrond, *Letters*, p. 274.
15. The treaties were basically the same, Elgin had inserted a 'most-favoured nation' clause, which Harris had omitted, see W. G. Beasley, *Great Britain and the Opening of Japan*, pp. 190–1.
16. Rutherford Alcock, 1809–97, army surgeon, Marine Brigade, Portugal, 1832–6; consul at Foochow, China, 1844; Shanghai, 1846; first consul-general Japan, 1859–65; Minister Plenipotentiary, Peking 1865–71. For his response to Japan see Alcock, *The Capital of the Tycoon*, reprinted Greenwood, 1969.
17. See Fitzgerald *Memories*, I, p. 356.
18. The Far East Consular service (China, later Japan, Siam and Korea) developed into a 'close service specially recruited with its own system of promotion and payment and its own code of instructions', see D. C. M. Platt, 'The Role of the British Consular Services in Overseas Trade', *EcHR*, no. 3 (1963) pp. 494–512.
19. The Consul's function was to 'protect and promote trade, administer shipping laws, act as head of the resident community and generally represent his government'. See P. Byrd, 'Regional and Functional Specialization in the British Consular Service', *JCH*, vol. 7, 1–2, 1972, pp. 127–45. Gibbon wrote of the 'humble station of the agents of commerce in a foreign land'. See R. A. Jones, *The Nineteenth Century Foreign Office and The British Diplomatic Service*.
20. R. A. Jones, *British Diplomatic Service*, p. 209.
21. Both Tozenji Temple, and the nearby Senkakuji Temple, at Shinagawa, were used by the British. Both were then close to Tokyo Bay, and – in the event of emergency – to the ships of the Royal Navy. Both temples can still be visited today. See R. Alcock, *The Capital of the Tycoon*, vol. I, and A. B. F. Mitford, *Memories*, vol. I, p. 383.
22. Alcock left Japan 'with the pleasant remembrance of difficulties overcome' but 'there still lingers a weary sense of the trouble that preyed upon the mind', Alcock, *Capital of the Tycoon*, vol. I, p. 150.
23. See B. H. Chamberlain, *Things Japanese*, pp. 360–2, F. V. Dickens, *The Life of Sir Harry Parkes*, vol. II, 1894; G. Daniels, 'Sir Harry Parkes, British Representative in Japan, 1865–1882', thesis, 1967, and H. Cortazzi, 'The Pestilently Active Minister', pp. 147–61.
24. The need for student interpreters in the Far East gave openings to gifted men, including Parkes and Satow, to enter the service and rise in it. The French initially used 'Two Catholic Fathers . . . of the Mission Étrangères, who had come to the Ryukyu Islands and studied Japanese



- as interpreters and this caused friction with a regime in which Christianity was proscribed. See C. Yamada, *Japonisme in Art*, p. 33.
25. See S. G. Checkland, *The Elgins*, ch. 15.
  26. See Parkes Papers, ULC, Correspondence Hammond to Parkes, 15 March 1868. By June 1868 Hammond was writing about affairs in Japan, 'I am glad to find you take so sanguine a view of the general prospect before us' (Parkes Papers, ULC Correspondence Hammond to Parkes, 17 June 1868). See Mitford (Lord Redesdale) *Memories*, vol. I, p. 109. See also M. A. Anderson, 'Edmund Hammond, Permanent Under-Secretary of State for Foreign Affairs, 1854-1873', thesis, 1955.
  27. For Thomas Blake Glover (1848-1911) see Mitford, *Memories*, vol. I, p. 377. See O. Checkland, 'Scotland and Japan, 1860-1914' and S. Sugiyama, 'Glover & Co: a British merchant in Nagasaki, 1861-1870' in I Nish (ed.) *Bakumatsu and Meiji: Studies in Japan's Economic and Social History*, International Studies, 1981/2, LSE, and S. Sugiyama, 'Thomas B. Glover: a British Merchant in Japan, 1861-70', *BH*, vol. XXVI, no. 2 (July 1984) pp. 115-38.
  28. Laurence Oliphant had been in Japan in 1853, as private secretary to Lord Elgin, and in 1861 as Secretary of the Legation. See A. Taylor, *Laurence Oliphant, 1829-1888*, 1982. A contemporary summed him up as 'a mystic in lavender kid gloves, full of spiritualism, strange creeds, and skits upon society', Mitford, *Memories*, p. 125; see also I. P. Hall, *Mori Arinori*, 1973, pp. 73-4; P. Harrison, *Oliphant*, 1956; and Chapter 8 of this volume.
  29. Matsuki Koan, 1832-93, later known as Terajima Munenori, had studied medicine and Dutch studies. He later became a senior diplomatic representative. Godai Tomoatsu, 1836-85, later became an entrepreneur, with interests in transport, mining and textiles. See also biographical notes, in Appendix.
  30. A. B. F. Mitford, later Lord Redesdale (1837-1916), had as a young man transferred from the FO to the diplomatic service. He served in Japan from 1866 to 1870, learning Japanese with Satow. In 1871 the publication of *Tales of Old Japan* made him famous. He became Baron Redesdale of Redesdale, Northumberland in 1876. He accompanied Prince Arthur of Connaught to Japan in 1906, and published *The Garter Mission to Japan* in that year.
  31. Satow wrote *Eikoku Sakuron* (English Policy) articles for the *Japan Times* (which were widely circulated), in which he argued that the Tycoon should step down and that a confederation of *daimyo* under the Emperor should take his place. The articles were widely believed in Japan to be official British policy, although Satow remarks that 'as far as I know it never came to the ears of my Chief', see E. M. Satow, *A Diplomat in Japan*, pp. 159-60. Satow's intervention, he wrote later, was 'doubtless very wrong, and very irregular' (p. 159).
  32. For Parkes policy during the final years of the Shogunate see G. Danics, 'The British Role in the Meiji Restoration: A Re-interpretive note', *MAS*, II, vol. 4, 1968, pp. 291-313.
  33. The changes which took place were as follows: August 1871, the

- abolition of the semi-independent *han* or clans and the establishment of a military, national administrative framework; September 1872, compulsory education for all children; December 1873 compulsory military service for all males; January 1873, the Gregorian calendar replaced the old lunar calendar; July 1873, the imposition of national system of taxation payable in money, not kind (rice), calculated on value of land rather than its crop.
34. G. Daniels, thesis, p. 370.
  35. J. H. Longford, 'England's record in Japan', *JSL*, vol. VII, 1904-7, p. 104.
  36. Parkes did not 'recognise any very definite line between our political and our commercial interests', see G. Daniels, thesis, p. 241.
  37. After the attack the British moved back to Yokohama for a time. See H. Cortazzi, 'The Pestilently Active Minister', *MN*, Summer 1984, vol. XXXIX, no. 4, p. 152.
  38. The Americans stressed the common interests, which, as a Pacific power, they had with Japan. They proffered advice on agriculture and education and their citizens were appointed as advisers to various offices of the Japanese government. The Germans had had a role in developing Japanese science and medicine from the beginning. In the later *Meiji* years the German position became stronger as they made remarkable progress in scientific and technical fields. A. H. House, an American journalist, made a career out of denigrating the British. His favourite target was Sir Harry Parkes, 'a living and breathing thorn in the side of Japan' whose career had been 'one long series of exactions, oppressions, insults and humiliations' practised on the Japanese. He founded *The Tokio Times*, see *Tokio Times*, 7 and 28 December 1878, and G. Daniels, thesis, p. 315.
  39. B. H. Chamberlain, *Things Japanese*, 1905, p. 392.
  40. Sir John Pope Hennessy (1834-91), Governor of Hong Kong from 1877 to March 1882, had spent his vacations in Japan. At the end of 1882 he was gazetted as Governor of Mauritius.
  41. The Okuma Papers, *Okuma Monjo* (hereafter *OM*), are held in Waseda University Library. There are some letters in English. The references here are to *OM* C.300, C.301 and C.333. It is not known how copies of these letters come to be in the *Okuma Monjo*; my thanks to Yoshitaka Komatsu for bringing these to my attention.
  42. It is worth noting that by the 'adaptations authorised by the Fugitive Offenders Act' of 1881, Britain grouped together for legal purposes, as if they were British possessions' China, Japan and Korea. See J. C. Tarring, *British Consular Jurisdiction*, p. 109.
  43. The case of Luis Campos in 1889 aroused much interest. Consul Longford's consular constable arrested Campos outside the boundaries of the treaty port. The Japanese protested. The Minister, Sir Hugh Fraser, instructed Consul Longford to release the man who was then re-arrested by the Japanese and handed over by them to the British. Fraser's actions aroused the anger of the treaty port residents. Lady Fraser reported, 'the papers were noisy, and British gringos (of whom the East is alas full) talked of the fine old days and Sir Harry Parkes'; see J. Hoare, in Nish and Dunn, *European Studies on Japan*, p. 127.

44. Sir F. R. Plunkett, an Irish Roman Catholic, was already familiar with Japan, having served there as Secretary of Legation in the 1870s.
45. Sir Hugh Fraser had Far Eastern experience having served in Peking for several years between 1867 and 1879. See M. C. Fraser, *A Diplomat's Wife in Japan*, edited by H. Cortazzi, 1982.
46. P. Le Poer Trench had previously served as Secretary of Legation in Tokyo for seven years.
47. See E. M. Satow, *A Diplomat in Japan*, and B. M. Allen, *Sir Ernest Satow*.
48. Interpreters had been recruited originally by recommendation, later by an examination following recommendation. After 1872 candidates took an open competitive examination. See R. A. Jones, *The British Diplomatic Service*, p. 210.
49. Allen, *Sir Ernest Satow*, p. 5.
50. Ibid, p. 27.
51. G. Fox, *Britain and Japan*, p. 9.
52. Mitford, *Memories*, vol. II, p. 416.
53. A. Michie, *The Englishman in China*, vol. II, p. 363.
54. Satow had left Japan in 1884 to further his career. He became Consul General in Bangkok and later (1888) Minister Resident in Montevideo and (1893) in Tangier.
55. G. A. Lensen *Korea and Manchuria . . . The Observations of Sir Ernest Satow*, Introduction, p. 9. Note also Sir George Sansom's comment:  

Satow was perhaps a rather dry scholar, but he was a prodigious worker. Besides being a most valuable member of the British legation in Japan at a crucial period, he added to his understanding of Japanese politics a remarkable command of the Japanese language and a scholar's interest in Japanese history and literature. Much of his work is still not superseded. He is one of the founding fathers of modern Japanology'; see Sir G. Sansom, reprinted *JAS*, vol. XXIV, no. 4, August 1965, p. 566.
56. Munemitsu Matsu when ambassador to the USA in 1888 had succeeded in, negotiating Japan's first 'equal' Treaty of Amity and Commerce with Mexico, and a revised Treaty of Commerce with the USA (February 1889).
57. For the text of the Treaty of Commerce and Navigation between Great Britain and Japan, 16 July 1894, see *Meiji Japan through Contemporary Sources*, Tokyo, 1972, vol. 3, pp. 187-200. The Japanese Minister in London at the time was Shuzo Aoki. See also I. H. Nish, 'Japan reverses the Unequal Treaties, the Anglo-Japanese Commercial Treaty of 1894', *Papers of Hong Kong International Conference on Asian History*, no. 20, 1964.
58. I. H. Nish, *Anglo-Japanese Alliance*, 1966, p. 10.
59. E. Grey (Viscount Grey of Falloden), *Twenty-five Years, 1892-1916*, 1925, vol. 1, p. 71.
60. This section owes much to I. H. Nish, *The Anglo-Japanese Alliance, the Diplomacy of Two Island Empires, 1894-1907*, 1966.
61. Yukichi Fukuzawa (1835-1901) was the principal philosopher and

- populariser of Western ideas of Meiji Japan, see Fukuzawa, Y., *Autobiography of Fukuzawa Yukichi* translated by E. Kiyooka, and biographical notes in Appendix.
62. Tadasu Hayashi (1850–1913), born Sakura *han*, Shimosa province, son of ‘Dutch’ trained doctor, studied in England, 1866–8, rebelled against new government, captured at Hakodate, but pardoned and entered government in 1871; Second Secretary to Iwakura Mission, Minister for Japan in London, 1899–1905; Foreign Minister, 1906; see also T. Hayashi, *The Secret Memoirs of Count Hayashi*.
  63. Hayashi, *Secret Memoires*, p. 84.
  64. Takaaki Kato, 1860–1926, educated Nagoya and Tokyo entered Mitsubishi Company and became protégé of Iwasaki Yataro, whose eldest daughter he married. He entered public service in 1887, and became private secretary to Okuma in 1888; appointed minister to Court of St James in London, 1894. He was an Anglophile.
  65. Joseph Chamberlain, in March 1898 (at a dinner in Kato’s honour) spoke of ‘the readiness of Great Britain to enter into an agreement with Japan for the settlement of relations in the Far East’. See A. M. Pooley, *Hayashi*, p. 83.
  66. But Satow although ‘he cultivated good will on both sides’ never went so far as to advocate an alliance. Nish, *Anglo-Japanese Alliance*, p. 79.
  67. Sir Ellis Ashmead Bartlett spoke strongly in the House of Commons, ‘I consider the rise of Japanese power in the East has been providential for this country . . . There is a very great and strong power growing up in Japan and by the help alone of Japan we can retain our position in the North Pacific’, (Parliamentary Debates, 1 March 1896, 4th Series LIV, pp. 305–306). In the newspaper world there were supporters including Sir Edwin Arnold of *The Daily Telegraph*; Sir Valentine Chirol (1852–1929), foreign editor of *The Times*; Frank Brinkley (1841–1912), proprietor and editor of the *Japan Mail*, and Tokyo correspondent of *The Times* and foreign adviser to NYK, who spoke Japanese well (see *Who Was Who*, 1897–1916). *The Times* Tokyo correspondent (from 1894) was Dr G. E. Morrison, correspondent in Peking from 1897 (see *The Correspondence of G. E. Morrison*, and also H. Trevor Roper, *Hermit of Peking: The Secret Life of Sir Edmund Backhouse*). These men were actively pro-Japanese.
  68. See Ian Nish, *The Anglo-Japanese Alliance*, pp. 131–4.
  69. ‘The Japanese government insisted on early publication of the treaty, the British government also felt “that it could not be kept secret for long and that as we should certainly have it dragged out of us in Parliament it was much better to make a clean breast of it at once”’, C. F. Chang, *Anglo-Japanese Alliance*, p. 82.
  70. The alliance was welcomed in Britain by the Admiralty. In 1903 the Commander of the China Station, Admiral Sir Cyprian Bridge, wrote that he ‘got on very well with the Japs.’ It was a different matter in the army, where responses to the German-trained Japanese produced critical judgements. Sandhurst-trained, Sir Claude MacDonald, took a more optimistic view writing ‘one of the assets . . . in favour of the

- alliance was the splendid courage of our allies (then to be)'. See P. Towle, *Estimating Foreign Military Power*, pp. 129 and 116.
71. P. Lowe, *Great Britain and Japan, 1911–1915*, p. 41.
  72. S. T. W. Davis, 'Treaty Revision, National Security and Regional Cooperation' in H. Conroy, S. T. W. Davis and W. Patterson (eds), *Japan in Transition, Thought and Action in the Meiji Era, 1868–1912*, p. 170.
  73. Sir Frederick Bruce, the third son of the 7th Earl of Elgin's second family, began his career (1842) as an attaché to Ashburnham's special mission to Washington; then became Colonial Secretary in Hong Kong, and Lieutenant Governor in Newfoundland before, being appointed Consul General in Bolivia and *chargé d'affaires* in Uruguay in 1847. In the early 1850s he became agent and Consul General in Egypt before accompanying his brother Elgin to China in 1857; he was Minister in China before serving in Washington as Minister from 1865. He died in Boston in 1867. Despite his aristocratic lineage he never served in a European mission (R. A. Jones, *The British Diplomatic Service*, p. 206).
  74. *EL*, Private, Sir F. B. to Earl Russell, Peking, 15 April 1864. The Richardson affair triggered off a series of other events. *Satsuma* were fined a large sum for the presumed offence against a British citizen. When they were reluctant to pay, a British naval squadron proceeded to the *Satsuma* capital, Kogoshima, and bombarded it. As a result the *Satsuma* leaders were forced to face reality. Their policies changed; see Chapter 8, note 10.

## 2 Traders and Bankers

1. British Sessional Papers HC 1859 [2571], vol. XXXIII, p. 1. Instructions from Lord Clarendon to Lord Elgin, Plenipotentiary in China and Japan.
2. The East India Company's tea monopoly had been ended in 1833. See Mui, *The Management of Monopoly*.
3. The text of the Treaty of Edo, of Peace, Amity and Commerce between Great Britain and Japan, 26 August 1858, is given in *Meiji Japan through Contemporary Sources*, Tokyo 1969, vol. I, pp. 4–5.
4. The comments of William Rathbone V (about business in China) could also apply to trade with Japan. Rathbone wrote 'an untried business, entered into recklessly and ignorantly, and sure therefore to be overdone at first, ending in heavy losses, taking time to weed out the unknowing and imprudent'. See S. G. Checkland, 'An English Merchant House in China after 1842', *Bulletin of the Business Historical Society*, vol. XXVII, September 1953, no. 3, pp. 158–89.
5. J. McMaster, *Jardines in Japan*, 1966, p. 9.
6. There is much on these matters in JM.
7. See J. E. Hoare, 'The Japanese Treaty Ports, 1868–1899: A Study of the Foreign Settlements', thesis.
8. Dr Hoare suggests that Sir Harry Parkes decided on Niigata.

9. See R. Alcock, *Capital of the Tycoon*, vol. I, p. 137.
10. See H. S. Williams, *Foreigners in Mikado Land*, Tokyo, 1963.
11. E. M. Satow, *A Diplomat in Japan*, 1921, p. 25.
12. *Ibid*, p. 22.
13. M. B. T. Paske Smith, *Western Barbarians*, pp. 362–3.
14. See J. P. Mollison, 'Reminiscences of Yokohama', Lecture to Yokohama Literary and Musical Society, 8 January 1909 (copy in Yokohama Archives of History).
15. See D. A. Farnie, *East and West of Suez*.
16. There were heated arguments 'in tea circles, whether the new teas, would stand being shut up in an iron steamer and carried through the tropics'; these fears proved unfounded. See Mollison, 'Reminiscences', p. 17.
17. G. Fox, *Britain and Japan*, p. 327, and pp. 327–42, and Paske Smith, *Western Barbarians*, pp. 229–65.
18. Parkes Papers, ULC, Correspondence, Hammond to Parkes, 26 April 1866.
19. Consular Report, Marcus Flowers, 1868, Accounts and Papers, vol. XIX, p. 1014.
20. Fox, *Britain and Japan*, pp. 342–52.
21. G. A. Lensen, *Korea and Manchuria... Observations of Sir Ernest Satow*, 1966, p. 181.
22. Fox, *Britain and Japan*, pp. 352–61.
23. *Ibid*, pp. 361–4.
24. The status of the British consul is examined by Peter Byrd, 'Regional and Functional Specialization', pp. 127–45.
25. Consul Vyse of Hakodate got into great trouble in 1866. As Sir Harry Parkes wrote, 'Vyse has made a great botch of a disgraceful case that has occurred at Hakodate in which three Englishmen ... have gone into the country and rifled Ainu tombs of skulls and skeletons', Parkes papers, ULC, Parkes to Winchester, 31 January 1866.
26. See C. Beresford, *The Break-up of China*, p. 412.
27. During the period when foreigners enjoyed rights of extraterritoriality the limits of the treaty ports were as follows:
 

Hakodate, ten *ri* in any direction.  
 Kanagawa, to the river Hoge and ten *ri* in any direction.  
 Hiogo, ten *ri* in any direction, that of Kioto excepted, which city shall not be approached nearer than ten *ri*.  
 Ten *ri* = 4275 yards English.
- See F. G. D. Bedford, *The Sailor's Handbook*, p. 315.
28. See B. L. Putnam Weale, *The Re-shaping of the Far East*, vol. I, p. 444.
29. D. Steeds and Nish, I., *China, Japan and Nineteenth Century Britain*, p. 50.
30. One example is that of steam engines ordered 'for Japan' on 12 August and 16 October 1865 from W. & A. McOnie, Glasgow, Scotland through International Credit Corporation, Holland and H. C. & K. de Wit. McOnie were primarily manufacturers of sugar-refining

- machinery, eventually incorporated into Mirlees Watson. See GUA, UGD 118, 3/37.
31. O. and S. Checkland, 'British and Japanese Economic Interaction under the early *Meiji*, pp. 139–55, coal-mining at Takashima closed in 1987, see 'Sinking Slowly in the East' *Sunday Times Magazine*, 16 August 1987.
  32. For vessels sold in Japan before 1868 see Consular Report, 1868, *Accounts and Papers*, Manufacturers, Commerce, China, Coal, etc., vol. XIX, p. 1014 and T. A. Milne, *Steam Vessels Sold or Reportedly Sold to Japan up to 1870*, for what may be a more comprehensive list. According to T. A. Milne the keenest purchasers were *Satsuma-han* which bought fifteen vessels. *Choshu* bought eight and *Tosa* and *Hizen* (*Saga*) each bought seven. Other clans which bought one or two vessels included *Aki*, *Geishu*, *Kishu*, *Bizen*, *Izumo*, *Tsu*, *Kokura*, *Matsuyama*, *Uajima*, *Kaga*, *Awa*, *Izuhara*, *Higo* and *Okayama*, although *Kirume* and *Chikuzen* each bought three.
  33. The engines were used primarily to ease manoeuvrability, especially when entering and leaving harbour. As Lord Elgin explained, 'we have now disconnected our machinery from the paddle wheels, and are gliding along over a smooth sea with a light breeze', *EL*, 1 August 1858.
  34. Glover & Co. wrote to Jardine Matheson as follows, 'Under any circumstances it would not be worth her while to come here unless Ship, Engines and Boilers are in perfect order and the latter good for at least three years work without repairs', Glover & Co., Nagasaki, to J. M. & Co., Shanghai, JM, Nagasaki, B/10/4/578, 25 March 1869.
  35. See S. Sujiyama, 'Thomas B. Glover: A British Merchant in Japan, 1861–70', *BH*, vol. XXVI, no. 2, July 1984, pp. 115–38. The *Jho-Sho Maru* and the *Ho-Sho Maru* were ordered from Alexander Hall of Aberdeen by Glover through the agency of Glover Brothers, Ship Insurance Brokers of Aberdeen. The City of Glasgow Bank loaned the balance for this work. The remains of the patent slip dock were still there at Nagasaki in 1981. For access to Alexander Hall's records apply to NRA Scotland, Register House, Edinburgh.
  36. Glover was involved in the arms trade both legally and illegally. As Joseph Heco remarked, 'the various *daimyo* were now (1867) all eager to ... acquire steamships, sailing ships, guns and munitions of war generally' (Heco, *Narrative of a Japanese*, p. 82). The American Civil War ended in 1865 when surplus rifles became available for export. Glover was involved in this illicit trade. In the list of Glover's debts, compiled in 1876, credit is claimed for '*Hizen* Officers Balance of Spencer rifles contract'. See also material in Royal Netherlands Archives, The Hague, in File Faillissement Glover & Co. 1870–1877 (hereafter File: *Faillissement*) *Nederlandsche Handel-Maatschappij* 5935 (hereafter NHM 5935). Spencer rifles, manufactured from 1860, were made for the American Union forces, they had a seven-shot magazine and were heavy and sturdy; when the American Civil War ended in 1864, these guns were available for re-sale; my thanks to Gavin White for his help.

Glover also operated at the official level writing to William Armstrong, Elswick Works, Newcastle upon Tyne as follows, 'Referring to our respects of 15th April bearing reference to a contemplated order for guns on account of the Japanese Government we have now the pleasure to hand you the undermentioned order . . . Muzzle loaders 15, 70 pounders with 15 carriages and slides complete, Breech loaders 10, 12 pounders, 5, 8 pounders, 5, 6 pounders. You will ere this have received through Messrs Matheson & Co., London, the necessary information as to the mode of payment which we hope you may find satisfactory. We have only further to urge you to hasten the execution of this order as the Japanese Government is extremely anxious to have the guns with as little delay as possible', JM, Nagasaki, B/10/4/343, 28 June 1865.

37. K. Yamamura, 'The Founding of Mitsubishi', p. 146.
38. Marcus Flowers, *Consular Report*, 1868, Accounts and Papers, Manufacturers, Commerce, China, Coal, vol. XIX, p. 1014.
39. Inoue attempted to resign in June 1873 but was persuaded to continue at his post, see H. J. Jones, *Live Machines*, pp. 87–90, see also *OM* especially C.162–163 (1871), and C.444 (1873), relating to railway building and to W. W. Cargill.
40. W. W. Cargill, 1813–1894, was the son of an army captain. In Japan 'as an administrator-adviser he seemed to understand how to work with, rather than against the bureaucratic tide' (Jones, *Live Machines*, p. 90). Cargill was railway adviser to the Japanese government between 1872 and 1877: he suggested the appointment of the Railway Commissioner, W. W. Cargill to Okuma, *OM*, C.162, dated 20 April 1871, and addressed from 'Yokohama No 32'; others are C.163, C.164 and C.165.
41. Charles Wirgman reported on the opening but also explained that as the train bearing the Emperor passed 'at the intermediate stations on each side of the line men, women and children were kneeling down', *ILN*, 7 December 1872, p. 546.
42. See P. J. English, *British Made*, pp. 13–14.
43. The North British Locomotive company was formed in Glasgow in 1903 from Sharp, Stewart and Co, Neilson and Co, and Dubs and Co. All three of these companies supplied railway engines to Japan prior to the amalgamation in 1903. After the amalgamation in 1903 the North British Locomotive Company continued to supply Japanese railway companies until 1911, see also Anon, *A History of the North British Locomotive Co Ltd. 1903–1953*.
44. Mrs Margaret Lamb kindly worked on the original records of NBL, GUA.
45. English, *British Made*, p. 14.
46. *Ibid*, p. 16.
47. *EL*, 12 August 1858.
48. *PP*, 1866, vol. LXII [3707] Parkes to Clarendon, Yokohama, 16 May 1866, p. 241.
49. See also H. Kawakatsu, 'International Competition in Cotton Goods in the Late Nineteenth Century', thesis; my thanks to H. Kawakatsu.



50. PP, 1878–9, vol. LXII [C2358] CR on Kanagawa, 1878, p. 36.
51. A. O. Hirschman, *Strategy of Economic Development*, p. 100.
52. PP, 1887, LXXXII [C4924] 'On Native Manufactures of Cotton Goods in Japan', p. 10.
53. H. Kawakatsu, 'International Competition in Cotton Goods in the Late Nineteenth Century: Britain versus India and East Asia' in W. Fischer *et al.*, *The Emergence of World Economy*.
54. See D. A. Farnie, *The English Cotton Industry*, Oxford, 1979.
55. T. Hayashi, 'The Automatic Loom and the Automobile', *Entrepreneurship*, no. 5, March 1983, pp. 8–15.
56. Ibid, p. 14.
57. *Manchester Guardian*, 14 July 1891; my thanks to Douglas Farnie for his help.
58. Local newspapers including the *Manchester Guardian* and the *Oldham Chronicle* as well as national surveys like the *Daily Mail Year Book* published fact-finding articles anticipating the demise of the machinery export trade.
59. *Daily Dispatch*, 14 October 1907.
60. The author is indebted to Norio Tamaki, Professor of Banking, Keio University, Tokyo, for advice and guidance; see also H. T. Patrick, 'Section VIII Japan, 1868–1914' in R. Cameron (ed.) *Banking and the Early Stages of Industrialization*, pp. 239–89, and K. Yamamura, 'Japan 1868–1930' in R. Cameron (ed.) *Banking and Economic Development*, pp. 168–98; see also A. S. J. Baster, *The Imperial Banks and International Banks*.
61. Osborn's account reads:

By the old laws of the Japanese Empire, the exportation of their currency, whether gold, silver or copper, is strictly prohibited and to ensure it, no European is allowed to possess native coin. The difficulty therefore of purchasing would be great upon that ground alone; but in addition to this rule, another exists, by which the natives are forbidden to receive our coins either. For a while it seemed there must be a deadlock in the market, but it was explained to us that a government bank existed in the bazaar, where we could obtain paper currency (available only in Nagasaki) in exchange for our dollars. From that bank we came out with bundles of very simple-looking strips of cardboard covered with cabalistic signs, indicative of their value, in lieu of the silver we had given . . . With these Japanese banknotes we paid the tradesmen, whom no amount of persuasion could induce to receive silver; and they again had to present them at the bank and receive the amount in the metallic currency of the country, paying of course a handsome tax for the honour of selling to foreigners (S. Osborn, *A Cruise in Japanese Waters*, 1859, pp. 43–4).

62. Sir Thomas Gresham (c.1519–79) advised Queen Elizabeth in 1558 that debased coins will predominate, and more valuable coins (in terms of actual value of the metal in them) will disappear and either be

hoarded, or exported where coins of different value or metal are both circulating, hence Gresham's Law 'bad money drives out good'.

63. J. H. Longford, a British Consul who had served for many years in Japan explained that

A silver dollar obtainable for 4s. 6d. in China, distant only a few days steaming could in Japan be exchanged into a gold token that was worth over 18s. in all the rest of the world. Trade conducted under such conditions was in itself sufficiently profitable to dazzle the most extreme optimism (J. H. Longford, *The Evolution of the New Japan*, p. 85).

See also M. Tatemoto, 'Gold, Silver and Paper, money muddles before and after the *Meiji* Restoration'.

64. R. Chalmers, *A History of Currency in the British Colonies*, pp. 375–6. See also T. Hamashita, 'A History of the Japanese silver *yen* and the Hong Kong and Shanghai Banking Corporation, 1871–1913' in F. H. H. King (ed.) *Eastern Banking*, p. 323.
65. See various pamphlets on the history of the Imperial Mint, available from the Imperial Mint, Osaka.
66. S. Mossman, *New Japan*, p. 415.
67. See H. J. Jones, *Live Machines*, p. 36, for the disagreements which arose between the Japanese and the British Mint employees.
68. One contract, dated 15 May 1872 was 'between the Oriental Banking Company of the one part and Roland Finch of the other part', the appointment of manager and other officers was vested 'by such Government in the said Corporation'. I am indebted to Kagitani Norichika, of the University of Tokyo, for a copy of Finch's contract. *Zouheikyoku rokujuunenshi* (Sixty Years of the Imperial Mint) Tokyo 1929, pp. 293–4.
69. Jones, *Live Machines*, p. 36.
70. There are thirty-four letters from Robertson in the *OM*, mostly to Okuma but some to Ito, Inoue and others. The first in English is dated 18 August 1869, C.632.
71. Kinder had the pleasure of showing His Imperial Majesty around the Mint, Mossman, *New Japan*, p. 456.
72. Later, foreigners were employed in the Mint for some years although on Japanese contracts. See Henry M. Napier, 'Recollections of a Visit to Japan', handwritten MS, Napier Collections, GUA, GD 96.
73. T. Hamashita, 'The Japanese silver *yen*' in F. H. H. King (ed.) *Eastern Banking*, p. 321.
74. G. Fox, *Britain and Japan*, ch. XV.
75. Frank Brinkley wrote:

To conduct coining operations with thoroughly reliable accuracy and regularity, demands a degree of scientific and practical attainments for which sober-minded persons cannot yet persuade themselves to give the Japanese credit... It was no secret that in the matter of the Mint the late Minister of Finance (Okuma) sacrificed

expedience to sentiment and set greater store by the name of independence than by the ability to be independent (*Japan Weekly Mail*, 10 June 1882).

76. Neither the Central Bank of Western India nor the Commercial Bank Corporation of India and the Far East survived the Overend Gurney banking crisis in Britain in 1866.
77. Paske Smith, *Western Barbarians*, p. 364, dates the opening of the banks as follows: Chartered Merchantile Bank of India, London and China, 1863; Commercial Bank of India, 1863; Central Bank of Western India, 1864; Hong Kong and Shanghai Banking Corporation, 1864; Hong Kong and Shanghai Banking Corporation, 1867; Oriental Banking Corporation, 1868.
78. See J. Iddittie, *Marquis Okuma*. Okuma also featured in the row in 1881 when the *London and China Telegraph* wrote, in highly critical vein, of a pamphlet published by Okuma entitled 'A General View of Financial Policy during Thirteen Years (1868–80).' See OM C.749, from Baron von Siebold, dated Berlin, 4 August 1881, which includes cuttings from the *London and China Telegraph* of 1881.
79. Alexander Allan Shand was born at Turriff, Aberdeenshire on 11 February 1844, son of James Shand, Surgeon, and Margaret Allan, see International Genealogical Index (Scottish Section) microfiche, Church of Jesus Christ of Latterday Saints (Batch C112476, Serial Sheet 0715), 1984.
80. OM C.729, 13 February 1894.
81. Shand had at the end of 1873, submitted a memorandum to Okuma; its recommendations were not accepted in their entirety. A. A. Shand to Okuma, OM C.726, 9 November 1873; other Shand to Okuma letters are C.727, 10 November 1873, and C.728, 15 December 1881; my thanks to Y. Komatsu.
82. Shibuzawa Eiichi, 1840–1931, of humble origins, attributed the fall of the *Tokugawa* Regime to the lack of opportunity for social mobility. He was one of the great entrepreneurs of *Meiji* Japan being engaged in founding some 300 enterprises of which the Osaka Spinning Mill, 1882, was the best known.
83. The Alliance Bank and Parr's Bank merged in 1892. Parr's Bank was taken over by the Westminster (now the National Westminster) Bank in 1918.
84. J. J. Gerson, *Horatio Nelson Lay and Sino-British Relations*, gives details of Lay's career in China. Lay – 'an old China crony of Parkes' (R. A. Jones, p. 35) – astounded Parkes with his behaviour.
85. Parr's Bank *Minute Book* no 2, Minutes of Meeting, 29 December 1904, p. 940. Shand received gifts from his employers of at least £7000, usually in units of £1000 for his assistance with the Japanese loans; my thanks to R. H. Reed, the archivist of the National Westminster Bank for his kind help. See also Shand's obituary, *The Times*, 16 April 1930, and *The Morning Post*, 16 April 1930.
86. T. Hamashita, 'A History of the Japanese Silver Yen', in F. H. H. King

- (ed.) *Eastern Banking*, pp. 321–49; the London branch of the Yokohama Specie Bank opened in 1884.
87. For the founding of the Bank of Japan, see note 89. The author is indebted to Norio Tamaki, who is himself working on *A History of Banking in Japan, 1859–1959*.
  88. John Robertson, the Manager of the Oriental Bank in Yokohama (see note 70) was shocked when the Yokohama Specie Bank was opened, judging correctly that such competition from a Japanese-owned bank would seriously affect his bank. The Oriental Bank ceased business in 1884.
  89. In November 1876 Matsukata, as head of a Japanese delegation, visited Paris. There he met Leon Say, the French Finance Minister, and was advised to set up in Japan a strong central bank. Matsukata was much impressed with continental banking, especially that in France and Belgium. On returning to Japan he prepared three reports *Zaiseigi* (On Finance) September 1881; *Nippon Ginko Setsuritsu no Gi* (On the establishment of the Bank of Japan) March 1882, and *Nippon Ginko Soritsu Shishu no Setsume* (The Prospectus of The Bank of Japan) March 1882. In these Matsukata noted the advantages of the Bank of Belgium partly because it had gained much from the experience of the Bank of France and Bank of England and partly because of its success in redeeming inconvertible currency.
  90. See P. Kauch, *La Banque Nationale de Belgique, 1850–1918* (Brussels, 1950), published by the National Bank of Belgium, p. 82, 'en 1850, la Banque Nationale se présentait réellement comme le modèle le plus parfait de banque d'émission sur le continent'. See also p. 327, note 161, 'Voir les déclarations du ministre des finances du Japon, comte Matsukata, lors de la réforme monétaire du Japon en 1881'. 'In point of the perfectness of organisation and the well-regulated conditions of business management, the National Bank of Belgium stands highest'; my thanks to Hermann van der Wee. See also *The Centennial History of the Bank of Japan*, 1982, and K. Ishii, 'Establishment of the Bank of Japan and the Japanese Industrial Revolution', unpublished paper, 1986.
  91. M. Matsukata, *Report on the Adoption of the Gold Standard in Japan and Report on the Post Bellum Financial Administration of Japan*.
  92. See S. G. Checkland review of F. H. H. King, *Eastern Banking* and G. C. Allan, *Appointment in Japan*, *TLS*, 30 March 1984, p. 330.
  93. See H. Mui, *The Management of Monopoly*, 1984.
  94. Gen-ichiro Fukuchi, a well-known Shogunate official stationed at Yokohama, reported that:

In those early days of port-opening everyone was groping in the dark, for no one was any wiser than anyone else about how to proceed. In Yokohama the two thoroughfares Honcho and Bentendori were lined with shops displaying in a haphazard manner, lacquer-ware, porcelain, copperware, fancy goods, piece goods, and what-not somewhat in the manner of a bazaar today. In this respect foreign merchants fared no better. They had a foreign bazaar where

woollen and worsted fabrics, woollen and cotton mixed goods and haberdashery were all on view, so as to get a line on Japanese taste in merchandise (Anon., *Foreign Trade in Japan*, Tokyo, 1975, p. 14).

95. S. Okuma, 'The Industrial Revolution of Japan', *North American Review*, vol. CLXXI, 1900, p. 678 and p. 683.
96. Ibid, p. 684.
97. Putnam Weale, *The Re-shaping of the Far East*, vol. I, p. 444.

### 3 Engineers for Lighthouses, Railways, Telegraphs and Mines

1. See H. J. Jones, 'The Formation of the *Meiji* Government Policy toward the Employment of Foreigners', pp. 9–30; and H. J. Jones, *Live Machines*.
2. P. Francks, *Technology and Agricultural Development in pre-war Japan*.
3. The provision of pure drinking water came somewhat later, see Chapter 12, section 2, a bronze statue to Henry Palmer who helped to provide the first modern water system in 1887, was unveiled in Yokohama (*The Independent*, 1 May 1887).
4. W. W. McLaren, 'Japanese Government Documents'; the bureaux are listed in Imp. Notif. No. 60, 2 December 1880.
5. Note the early bicycle industry in Sakai City, Osaka, where metal workers (blacksmiths) previously involved in making cutlery and matchlocks, turned their attention to bicycle making. See (in Japanese) *Actual State of the Bicycle Industry in Osaka Prefecture – Production*, 1954, pp. 4–15; my thanks to Tetsuro Nakaoka for his help. For links between pre- and post-1868 industry see also Chapter 2, Section 4; Chapter 14, Section 3, and Chapter 15, Section 4.
6. Although not comprehensive, the best source, in English, for detailed information on the salaries and length of service in Japan of British engineers and others is H. J. Jones, 'The *Meiji* Government and foreign employees, 1868–1900', thesis; see also H. J. Jones, *Live Machines*, Appendixes 1 and 2.
7. Richard Henry Brunton (1841–1901) was one of the discontented foreign engineers, see Brunton ms. 'Pioneering in Japan' in W. E. Griffis papers, Special Collections, Rutgers University Library, New Brunswick, New Jersey, USA.
8. Albert Richard Brown (1839–1912) was a contented foreign employee who made a life-time's career out of serving the Japanese. The papers of Brown, MacFarlane and Co. are deposited in Glasgow University Archives (GUA).
9. H. J. Jones, '*Bakumatsu* Foreign Employees', p. 326.
10. R. H. Brunton, 'The Japanese Lights', p. 2.
11. The archives of D. & T. Stevenson are held at the National Library of Scotland, Edinburgh. Thanks to Quentin Stevenson for permitting access and to Patrick Cadell for the arrangements made.
12. Craig Mair, *A Star for Seamen*, p. 189.

13. Stevenson's Out Letter-book, NLS, 29 November 1871, p. 567.
14. Brunton, an Aberdeenshire man, had worked for P. D. Brown and later for John Willett, railway engineers in Aberdeen, before moving in 1864 to London to work in the office of W. R. Galbraith, engineer to the London and South Western Railway. Further details of Brunton's career can be found in the Brunton ms., 'Pioneering Engineering', WEG papers.
15. Munenori Terajima (1832–93) was an influential *Satsuma* man, a Minister for Foreign Affairs; see Appendix for biographical details.
16. Brunton explained:  

Our trip was begun on the 27th of November 1868 . . . although bays were entered and places visited which had not been surveyed, the voyage was completed without accident on 5th January 1869. The sites for fourteen lighthouses were visited and surveyed, their height above sea level measured; notes taken of the building material and labour obtainable at each, and other information procured (R. H. Brunton, 'Pioneering Engineering', WEG papers).
17. See R. H. Brunton, 'The Japan Lights', p. 4.
18. Mair, *A Star for Seamen*, pp. 190 and 191.
19. Stevenson's took care to match the parts sent, writing: 'The different parts have been type-marked and the hold and cornice plates on the dormant side of the lantern have been painted black. A spare cast iron vertical casing and three cross ones have been sent in case of breakage' (Stevenson Out Letter Book, 5 May 1871).
20. 'The three workmen who have been engaged to go to Japan leave on 3 April. Their names are John Russell, who was foreman of joiners at Messrs Milne; Thomas Wallace also from Messrs Milne, who is an iron welder and has been chiefly employed in lighthouse apparatus, and John Mason who is a mason and understands granite dressing etc.' (Stevenson Out Letter Book, 30 March 1869).
21. An early example of French lighthouse building in Japan and a lighthouse keeper's house can be seen at Meiji Mura, near Nagoya, Japan.
22. Lewis, Bush, *The Life and Times of the Illustrious Captain Brown*. See also papers of A. R. Brown MacFarlane, GUA.
23. The *Thabor* had been the first vessel to reach Shanghai after passing through the Suez Canal. See D. A. Farnie, *East and West of Suez*, p. 193.
24. The *Meiji Maru* was ordered from Robert Napier's yard on the Clyde. It was built along sailing-ship lines with auxiliary steam engines. By extraordinary good fortune the vessel has survived and is now being restored as a National Treasure in Japan. It can be seen in dry dock at the Tokyo Maritime University. One of its features is a magnificently decorated cabin for the Emperor.
25. E. G. Holtham, *Eight Years in Japan*, pp. 261–2.
26. Stevenson's Correspondence to, 30 September 1871.
27. See the translators introduction, S. D. Brown, *The Diary of Kido Takayoshi*, Vol. I, 1868–1871, p. XXXVI. Kido understood the importance of 'equating the Emperor with national power'.

28. *The Far East*, vol. V, no. 3, March 1874, p. 206.
29. Brunton was also responsible for the design and building of the first iron bridge in Japan, at Yokohama. This bridge with a memorial plaque (for pedestrians only), now straddles part of a four-lane highway. He also prepared plans for sewers, water supplies and railways.
30. B. H. Chamberlain (1891 edition) *Things Japanese*, pp. 265–6.
31. There was opposition from the enemies of modernisation, as well as from those like palanquin-bearers, pack-horse drivers and innkeepers who lived by the old system of transport.
32. See E. Aoki, 'Edmund Morell, 1841–1871, the Father of Japan's railway', *Look Japan*, 10 December 1984.
33. Enbutsu, *Discover Shitamachi*, p. 161. E. G. Holtham, *Eight Years in Japan*, pp. 209–12.
34. Morell's grave and that of his Japanese wife, who died within days of her husband, is in the foreigners' cemetery in Yokohama. It is tended by the Japanese Railway Association.
35. The Japanese had reason to be grateful to him for he appreciated that the Japanese, with their tender feelings, would have to set up their own training facilities and management systems. Accordingly he urged Okuma and Ito in these directions: they passed his suggestions to the Council of State. The Ministry of Industry was founded within six months; the Imperial College of Engineering set up within a year.
36. E. G. Holtham, *Eight Years in Japan*, p. 104.
37. Learning by copying was an important element in the year-by-year process of technical transfer, the Japanese noted that American machining on the locomotives was 'rather rough' while the British models 'were conservative in design though being excellent in machining'. See T. Nakaoka, 'On Technological leaps of Japan as a developing country, 1900–1940', pp. 1–25; see also F. H. Trevithick, 'Japan's Railway System', pp. 157–80.
38. Inoue understood the long-term importance of the railway as a necessary part of the modernisation process, but rapid progress was not possible. Until the mid-1880s the Japanese government was building only a modest 130 miles of track a year. Later on private companies, required to raise their own capital, were encouraged to enter the field.
39. As late as 1904 K. Inuzuka, then Director of the Imperial Railway Bureau, commented that 'as yet the use made of the railway by our people is still in its infancy', A. Stead, *Japan by the Japanese*, Section on Railways, p. 495.
40. J. H. Longford, 'England's record in Japan', p. 110.
41. J. Morris, 'Telegraphs in Japan', pp. 127–47; and J. L. Kieve, *The Electric Telegraph*.
42. On this occasion the *Nagasaki Express* reported matter-of-factly that 'Telegraphic Communication between this port and Europe through Siberia via Vladivostock was established on Tuesday last.' *Nagasaki Express*, no. 98, 25 November 1871.
43. R. H. Brunton believed that he, together with G. M. Gilbert, was responsible for this line. See 'Pioneering Engineering' ms., p. 8.

44. E. G. Holtham, *Eight Years in Japan*, p. 57; and J. Morris, 'Telegraphs in Japan', pp. 140–1.
45. Private or government messages could be written in cipher 'such cipher to be either in ordinary figures or Roman letters, but a combination is not admissible'. (Copy of early government telegraph regulations, in *OM*.)
46. J. Morris, 'Telegraphs in Japan', pp. 144–5.
47. *Ibid*, p. 141.
48. The most useful contemporary account is C. Netto, then Professor of Mining and Metallurgy at the University of Tokyo, who wrote 'On Mining and Mines in Japan', pp. 1–55 in *Memoirs of the Science Department of the University of Tokyo*, Tokio, 1879 (copy in ULC, P.240.1.b.11.1).
49. In one government list of forty-seven mining employees, including those at the Head Office of the Ministry of Industry, twenty-four were French, twelve German and eleven British. See N. Kudo, 'The Modernisation of Japanese Non-ferrous Metal Mining – A Survey of the First Phase, 1868–1885', unpublished paper. My thanks to Norikazu Kudo, Faculty of Business and Commerce, Keio University, Tokyo.
50. As Netto has noted, 'mining and reduction works if they are to have any prospect of success, require much more than any other technical establishment to be adapted to local circumstances', C. Netto, 'On Mining and Mines in Japan', pp. 7–8.
51. Even with J. C. H. Godfrey as Chief Mining Engineer, British personnel played a relatively minor role in Japanese mines. Other Britons included Frederick Hayes who served as Secretary at 260yen a month from 1872 to 1876 and William Bell Davis an instructor, at 365yen a month over the period, 1873 to 1876.
52. M. Sumiya and K. Taira, *An Outline of Japanese Economic History*, p. 217.
53. C. Netto, 'On Mining and Mines', p. 7.
54. The miners, often conscripted men or convicts, worked in intolerable conditions. But note the report of Mr Furukawa, the owner and developer of Ashio Copper Mine, expressing practical concern for miners' welfare in A. Stead, *Japan by the Japanese*, p. 454.
55. British engineers worked at Sado gold and silver mine, on an island in the sea of Japan, offshore from Niigata. They were closely bound to their place of work and alone apart from the tiny group of compatriots. Of the British managerial staff at Sado, Erasmus H. M. Gower served as Ore Preparation Officer from 1869 to 1873 at 600yen a month. James Scott must have found conditions satisfactory for he remained from 1870 to 1881, at 280yen a month, as Instrumental Officer. Three British miners are listed at Sado, all recruited in 1873, namely James Dale (at 80yen a month) departed in 1874; John Simmons (also at 80yen a month) stayed until 1876, and Thomas Treloar, at 120yen a month, who remained until 1877. See N. Kudo, 'The Modernisation of Japanese Mines'.
56. O. and S. Checkland, 'British and Japanese Economic Interaction . . . the Takashima Coal Mine, 1868–1888', pp. 139–55.



57. Frederick Antony Potter was appointed mining engineer in January 1871: he served for seven years often under hazardous, and occasionally dangerous, circumstances. His managerial position was never easy, as he constantly strove to modernise the mine and increase productivity, while a succession of other interests, both British and Japanese, often in conflict, struggled to obtain possession of what was believed to be an asset of great profit potential, Archives of Netherlands Trading Society, Box No. 5935.
58. For a discussion of the number of 'man-years' employed in the various fields, see H. J. Jones, *Live Machines*.
59. William Walter Cargill (1813–94); see Chapter 2, Note 40 above.
60. Richard Vicars Boyle (1822–1908) was an engineer on the railways earning \$1250 per month while Thomas Arthur Binton who was also a chief engineer on the railways received \$600 per month. Edmund Gregory Holtham was a civil engineer responsible for railway survey and construction and was earning \$550 per month. But some 80 per cent of the men employed in the Ministry of Public Works received \$200 or less per month for their services. Altogether the numbers of British being paid during the decade from 1872 to 1882 was a considerable drain on Japan's resources.
61. The series of articles published in *The Engineer* between 1896 and 1898 reveals a remarkable interest by a group of professional men under the heading *Modern Japan, Industrial and Scientific*; 'our special correspondent' reported under the following heads:
 

27 November	1896	1. Anglo-Japanese Business Relations
11 December	1896	2. The Government Inspection of Machinery
8 January	1897	3. The Yokosuka Dockyard
15 January	1897	4. Japanese Labour and Workmanship
5 February	1897	5. Electrical Work
19 March	1897	6. Locomotive Building and Purchasing with supplement showing 30 types of locomotive engines for the Imperial Railway, Japan
26 March	1897	
23 July	1897	7. The Chances of the Foreign Engineer
10 September	1897	8. The Railways: (a) General Remarks
17 September	1897	9. The Representatives of Foreign Engineering Firms
1 October	1897	10. Machinery <i>versus</i> Agriculture
8 October	1897	11. Official Trade Commissions and Flying Business Visitors
22 October	1897	12. Bogus Manufacturers
3 December	1897	13. The Training of Engineers
10 December	1897	13. The Training of Engineers (contd.)
28 January	1898	14. The Projects of Engineering in Formosa
4 February	1898	15. The Patenting of Inventions
11 February	1898	15. The Patenting of Inventions (concluded)
25 February	1898	16. Japanese-made Machinery
4 March	1898	17. The Railways: (b) Statistics and forecasts
11 March	1898	18. Two Large Business Concerns

- 11 March 1898 19. The Foreign Advisers to the Japanese  
 25 March 1898 20. General Summary and Conclusion
62. *The Engineer*, 25 March 1899, pp. 271–2.
63. As Dyer explained:  
 the railways which have been constructed in Japan were fully utilised to convey the materials and the ships to transport them overseas. The telegraphs were used to communicate instructions, and to keep the authorities informed regarding movements and requirements. The dockyards and shipbuilding yards were ready to undertake repairs and the arsenals and machine shops to turn out materials of all kinds as well as appliances which aid operations in the field. Light railways were laid down on the way to battlefields, and wireless telegraphy and telephones to convey instructions to the soldiers; in short all the latest applications of mechanical, electrical, and chemical science were freely and intelligently used, H. Dyer, *Dai Nippon*, 1905, p. 415.

#### 4 The Makers and Operators of Ships

1. See C. A. Fisher, 'The Britain of the East: A Study of the Geography of Imitation', pp. 343–76.
2. See A. T. Mahan, *The Influence of Sea-power*. Mahan's works were to be a blueprint for American imperial expansion in the Pacific and in the Caribbean.
3. W. Laird Clowes, *The Royal Navy*, Vol. VII, 1903, p. 68.
4. Mahan refers to this 'In Japan, and as yet in Japan alone, do we find the Asiatic welcoming European culture, in which, if a tree may fairly be judged by its fruit is to be found the best prospect for the human race to realize the conditions most conducive to its happiness', A. T. Mahan, *The Problems of Asia*, p. 150.
5. W. Laird Clowes, *The Royal Navy*, Vol. VII, 1903, p. 84.
6. J. C. Perry, 'Great Britain and the emergence of Japan as a Naval Power', pp. 305–21.
7. There is an interesting and detailed report on the Japanese Imperial Naval College, its students, staff and curriculum in NMM. See NMM NOE 15A, 2 March, n.d. but probably 1905.
8. Seppings Wright, *With Togo*, pp. 15–19.
9. L. N. Pascoe, 'Britain's Contribution to Japanese Hydrography', in D. Shoji (ed.) *Researches in Hydrography and Oceanography*.
10. See Notebook of Admiral Pelham Aldrich written while commanding survey vessel *Sylvia* in Japanese waters, c.1878, NMM, ALD/2.
11. See Fred T. Jane, *The Imperial Japanese Navy*, pp. 234–41.
12. In 1905 the British Naval Attaché reported on Dock no. 4 which 'is now approaching completion' remarking that 'there is a great deal of cutting and slicing of the hillside to find room for any new establishment'. Sir Gerard Henry Ucted Noel (1845–1918) was Commander-in-Chief, China Station, 1904–6; for Yokosuka see NMM/NOE/15A, 2 March 1905.

13. For Kure see NMM/NOE/8A, 31 October 1905.
14. See B. L. Putnam Weale, *The Reshaping of the Far East*, vol. I, p. 396.
15. See Jentschura, H. *et al.*, *Warships of the Imperial Japanese Navy*; and A. J. Marder, *British Naval Policy, 1880–1905*.
16. There was intense competition in the 1880s and 1890s to produce high-quality armour-plate. Hayward Augustus Harvey produced a new type of armour-plate, accepted by the US Navy in 1891. The Harvey process consisted of enclosing a low-carbon steel plate at a high temperature between a mass of carbonaceous and non-carbonaceous material, the plate was then hardened on the carburised side and quenched in running water. John Browns, steel-makers in Sheffield, had simultaneously produced something similar which was more generally used in British shipyards. Krupp armour, made in Germany, was slightly different but also highly regarded.
17. The *Dreadnought* was nearly 18 000 tons, powered by the new steam turbines and fuelled with oil instead of coal to achieve a speed of 21 knots. Although many continued to think in terms of coal-fired ships, 'Oil is the very soul of future sea-fighting' as Tennyson D'Eny Court wrote in 1912, see *A Shipbuilders Yarn*, p. 79. They were armed with ten heavily protected 12-inch guns as well as with 12-pounder quick-firing anti-torpedo-boat guns. See A. J. Marder, *From the Dreadnought to Scapa Flow*, 1961.
18. NMM, Cover 274, Adm 138/336.
19. See A. Preston, *The Ship: Dreadnought to Nuclear Submarine*, HMSO, 1980. See pp. 33–6.
20. See W. D. Wray, *Mitsubishi and the NYK*, on which this section relies heavily.
21. For Yataro Iwasaki, see Wray, *Mitsubishi*, pp. 22–3.
22. R. C. Clark, *The Japanese Company*, 1979, pp. 22–3.
23. During the post-1868 interregnum, Yataro as a domain official, was operating a carrier's business with domain steamships. Later, in return for taking over the domain's debts, he was granted its assets, including steamships and camphor and silk-reeling enterprises. Iwasaki emerged as an astute business dealer accustomed to working closely with government authorities and foreign merchants.
24. Wray, *Mitsubishi*, p. 27.
25. By the end of 1874, the expedition's 'ships had made 24 voyages, transported three battalions as well as 5600 civilians, 45 000 bales of rice, large quantities of munitions and currency, including the idemnity of 500 000 *taels* (from the Chinese)', Wray, *Mitsubishi*, p. 51.
26. L. Bush, *The Illustrious Captain Brown*.
27. Sir Harry Parkes, the British Minister deplored the involvement of either British ships or British citizens in a punitive campaign mounted by the Japanese, Wray, *Mitsubishi*, pp. 51–2.
28. Toshimichi Okubo, then Minister of Home Affairs, was clearly won over, reporting that, Yataro Iwasaki 'operates a completely self-reliant enterprise', Wray *Mitsubishi*, p. 77.
29. Anon., *The Golden Jubilee of NYK*, 1935, p. 164.
30. See Wray, *Mitsubishi*, Part II, formation of NYK.

31. 'Report to President of NYK', 1886, A.R. Brown papers, GUA, UGD/172.
32. In the final phase of British service to NYK long-serving officers were often seconded to run the NYK London Office. *Golden Jubilee History of NYK*, pp. 164–5.
33. Henry Napier, shipbuilder on the Clyde, left an interesting description of a Japanese junk in 1886, in his 'Recollections of a Visit to Japan', handwritten ms, GUA, GD96.
34. In 1899 Admiral Lord Charles Beresford, a distinguished naval expert, reported on the Mitsubishi yards in Nagasaki, C. Beresford, *The Break-up of China*, pp. 410–11.
35. See S. Broadbridge, 'Shipbuilding and the State in Japan since the 1850s', pp. 601–13.
36. James Blair, 'The Japanese Mercantile Marine', p. 40.
37. The Glasgow connection with Mitsubishi at Nagasaki was then strong. It was noted on a visit in September 1981 that the archives at the yard held a remarkable contemporary collection of books on engineering and shipbuilding dating from the 1870s, including much by J.M. Rankine, and on the dock-side stood a large crane marked 'Appleby Ltd. No. 200, Glasgow 1909, load 150 tons'.
38. S. Broadbridge, p. 606.
39. The Osaka Iron Works started by building wooden vessels but soon graduated to iron and later steel ships. The firm together with the industry, suffered booms and slumps, these related to the wars with which Japan became involved, notably the Sino-Japanese war of 1894–5 and the Russo-Japanese war of 1904–5. The works flourished and with the introduction of shipping subsidies in 1896, Hunter felt sufficiently confident to expand to a works at Sakurajima in 1899 where he planned and built steel vessels. In 1911 despite a depressed state of trade, the Osaka Iron Works absorbed the nearby Innoshima Dock. Although the principal interest of the company remained shipbuilding, E. H. Hunter and his son, Ryotaro Hunta, were keen to diversify. By 1900 they were making cast-steel tubes for water mains, steel bridges and other steel components. The Company was reorganised as part of the Hitachi group in 1914. By 1915, as a limited company, it had contracted to build thirty-three ships with an aggregate weight of 147 700 gross tons. Hunter's drive and ambition made the Osaka Iron Works one of the success stories of the *Meiji* shipbuilding industry. For advice on Edward Hazlitt Hunter, 1843–1917, my thanks to Yukio Yamashita.
40. Craftsmen included James Fowler Mitchell (1829–1903) of Aberdeen, Scotland, 'Master Shipbuilder, for 44 years a resident of Japan' who had served in the shipyards of both Nagasaki and Kobe, and John Hill 'a native of Scotland and for many years an employee of the Mitsubishi Company' who died in 1900 at Nagasaki. See the gravestones in the foreigners cemeteries at Nagasaki and Kobe and Yokohama.
41. In 1888 J.G. Reid became Chief Engineer at Osaka Zhosen, responsible for planning and drawing. During his three-year service he succeeded in designing and supervising the building of steel ships of

- 7000 tons each. These included the *Chikugogawa Maru*, *Kisogawa Maru* and *Shinano Maru*. Mitsubishi recruited J. S. Clark as chief engineer; he was responsible for, among others, *Hitachi Maru*. (*Iwasaki Yanosuke Den (The life of Iwasaki Yanosuke)*) vol. 2, pp. 301 and 307.
42. J. F. C. Conn, *The Glasgow University Department of Naval Architecture 1883–1983*.
  43. F. Elgar, 'Japanese Shipping', pp. 59–82.
  44. Although Biles held the chair for thirty years, retiring in 1921, he had set up a consultancy in Naval Architecture in Westminster in 1907 and rarely lectured in Glasgow in person in later years. See entry for (Sir) John H. Biles in *Who Was Who, 1929–1940*, p. 111.
  45. For example, the principal shipbuilding yards in Japan were attempting to make workable triple expansion reciprocating steam-engines during the second half of the *Meiji* period, as the table below shows. The vessels were all very small.

Shipyard	First iron vessel	First steel vessel	First construction of triple- expansion engine
Mitsubishi Nagasaki	1887 <i>Yugao-maru</i> 206 gross tons Double Expansion engine	1890 <i>Chikugogawa-maru</i> 610 gross tons Triple Expansion engine	1890 483 horse power
Kawasaki	1886 <i>Yoshinogawa- maru</i> 380 gross tons Double Expansion engine	1890 <i>Tamagawa-maru</i> 576 gross tons Triple Expansion engine	1893 440 horse power
Osaka-Tekko	1888 <i>Taiko-maru</i> 134 gross tons Double Expansion engine	1890 <i>Kumagawa-maru</i> 558 gross tons	1893 367 horse power
Ishikawajima	1888 <i>Chokai</i> 731 gross tons Double Expansion engine gunboat	1890 <i>Kamikawa-maru</i> 60 gross tons paddle steamer	1902

Source: T. Nakaoka, 'On Technological Leaps of Japan as a Developing Country, 1900–1940', p. 6. The author is indebted to T. Nakaoka for his kind help.

46. Y. Fukasaku, 'Technology Imports and R&D at Mitsubishi Nagasaki Shipyard in the Pre-war Period', in *Silkworms, Oil & Chips* (ed. E. Pauer) (Bonn 1986).
47. S. Broadbridge, 'Shipbuilding and State', p. 607. See also detailed report of the Japanese Shipbuilding industry in *Japan Chronicle*, 3 August 1917 (copy in Diet Library, Tokyo).
48. On 15 May 1905 one of the British naval attachés, A. T. Jackson, wrote to report on the Tsushima action:

I called on Admiral Togo at Sasebo and congratulated him on the great victory he had won for his country and said how proud I was at having been permitted to be present on such an occasion. I have never seen anyone so thoroughly happy. He sat and chuckled delightedly and . . . Admiral Kato also talked freely and I was able to get a good deal of information on points that I either knew nothing of or very little. I think the Japanese admirals were only too pleased to get someone to talk to. With their own officers so much 'strict Service' they may not be able to talk freely. Anyway they unbent to me. (A. T. Jackson, Naval Attaché, at sea aboard HIJNS Azuma.)

Although the British naval attachés were at sea with the IJN Captain John de M. Hutchinson reminded Noel 'the Japanese still wish the face that no attachés are with the fleet to be kept up', Hutchinson to Sir Gerard Noel, NMM, NOE/15A, 21 January 1905.

49. Papers by Captain Hutchinson, 2 June 1905 and 4 August 1905, NOE/15A.
50. F. Elgar, 'Japanese Shipping', *JSL*, vol. III, 1893–5, p. 81.
51. G. N. Curzon, *Problems of the Far East*, p. 413.

## 5 Educators for Engineers

1. See C. R. Boxer, *Jan Compagnie in Japan, 1600–1817* and *The Dutch Seaborne Empire*, and J. J. Jones, 'Bakumatsu Foreign Employees', pp. 9–30.
2. See H. J. Jones, 'The Formulation of Meiji Policy towards the Employment of Foreigners', pp. 305–27.
3. In theory the Japanese government liked the idea of help coming from scholars of different nationalities for it lessened their dependence on any one nation, but in practice, confusion over the foreign language in which subjects were taught led to conflict and duplication of courses in any one institution, K. Koizumi, 'Japan's First Physicists', p. 33.
4. See also J. R. Bartholomew, 'Japanese Modernisation and the Imperial Universities, 1876–1920', pp. 251–71 where the author writes:

nor can the predominance of German professors in the Japanese Universities before 1900 be seriously challenged . . . During the Meiji period of the 120 foreign academics at Tokyo 46 [38 per cent] were German by origin . . . 30 faculty members were British and 12 were American [25 per cent and 10 per cent] . . . of 19 foreign professors of medicine 16 [85 per cent] were German, in Agriculture the Germans were 63 per cent of the total [12 out of 19]. They were also the largest bloc in law [7 of 23] and ranked second in letters and engineering [6 of 25 and 3 of 13 respectively]. Only in basic Science – where the British and Americans dominated – were the Germans poorly represented [2 among 21], p. 263.

5. A. Salam, *Address* (on Development).
6. The origins of the Imperial University of Tokyo are complex but are to be found in the following institutions: (a) *Daigaku* or University

- founded (1630s) to offer a curriculum of the Chinese Classics and Confucian Studies. Later there was strife over what ought to be taught. This aspect of the university collapsed; (b) *Daigaku Nanko*, originally the descendent of the Institute for the Investigation of Barbarian books, and later was renamed the Institute for Enlightenment (*Kaiseisho*) University, South division in 1870 and was to specialise in Western Studies, this became a flourishing and important college; (c) Tokyo *Igakko* or Medical School was also part of the new foundation.
7. Tanakadate Aikitsu, an early physicist, recorded that W. K. Röntgen commented in 1898, 'It was certainly far-sighted of your country to class the engineering school on a level with the University. Although we are about to set up that sort of organisation [in Germany] obstinate old men of theology and law object to it as if they understand everything, and so we have been hindered by them', Koizumi, in *Historical Studies in the Physical Sciences*, vol. 6 (1975), pp. 3–100.
  8. R. H. Smith was educated at the University of Edinburgh, won a class prize in Engineering but did not graduate. He was well regarded by Fleeming Jenkin, his Professor of Engineering. After 1878 Smith became Professor of Engineering at Mason's College, later the University of Birmingham. He failed in his application for the Chair of Engineering at Cambridge in 1890. See *Testimonials in Favour of Robert Henry Smith* (GUL Stack Y2 c.14, 1890). In 1894 he resigned from his Chair of Engineering 'without succeeding in convincing the council of the necessity of a more liberal policy toward the Engineering Department', see The Mason Science College, Birmingham, Minutes of Council, 1894 (University College 4/1/24). He subsequently took up consultancy work in London.
  9. See R. H. Smith, *Testimonials* (GUL Stack Y2 c.14, 1890).
  10. Professor R. W. Atkinson was an assiduous member of the Asiatic Society of Japan, see Bibliography for details of papers written for *TASJ*.
  11. See the obituaries for Robert William Atkinson in *The Institute of Chemistry of Great Britain and Ireland, Journal and Proceedings*, February, 1930, p. 56, and *Journal of the Chemical Society* 1931, p. 1024.
  12. It was Ewing's special gift to involve his students in his research, especially into magnetism and scismology, thus influencing the first generation of Japanese physicists. According to Aikitsu Tanakadate, one of a distinguished group attached to Ewing, this research commitment enabled Japanese, for the first time, to realise that they could themselves make original contributions to international learning. Ewing had a notable group of students, including Dr Ryintaro Nomaro, later director of the South Manchurian Railway, Dr Rynsaki Godai, a distinguished mining engineer, Tetso Tsuchida, Dr Shohei Tanaka and Dr Aikitsu Tanakadate. The two last-named later represented the Imperial Academy of Science in the House of Lords. See A. W. Ewing, *The Man of Room 40*, pp. 76–7.
  13. J. A. Ewing, *An Engineer's Outlook*, [1933], p. XIII. See also A. W.

Ewing, *The Man of Room 40*; and *Proceedings of the Royal Society*. Obituary notices of FRS 1, 1932–5, James Alfred Ewing, 1855–1935, pp. 475–91. Ewing's Obituary was written by R. T. Glazebrook who quoted Ewing speaking of his Japanese students 'To an inexperienced teacher there was stimulus and help in pupils whose polite acceptance of everything put before them was no less remarkable than their quick intelligence and receptiveness . . . For quite half a century two or three of these Japanese youths of 1880 have kept in touch with me as a friend', p. 476.

14. Knott was awarded (1897) the Keith Prize of the Royal Society of Edinburgh for original work on magnetic strains. His publications included work on Electricity and Magnetism, and Physics of earthquake phenomena. Knott subsequently became General Secretary of the Royal Society of Edinburgh which placed him at the heart of the Edinburgh establishment. In this way academics from the University of Edinburgh served in important scientific posts for almost twenty years. Knott's *magnum opus* was his *Life and Scientific Work of Peter Guthrie Tait*. See *Who Was Who, 1916–1928*, p. 594.
15. Although the title 'The Imperial College of Engineering' (*Kobu dai Gakko*) is used here throughout, other translations were 'College of Engineering' or 'College of Technology'. There is a useful contemporary account of the College in *Nature*, vol. XVI, May 1877, p. 44.
16. It was noted that:

This Engineering College with its substantial buildings, noble central hall, lecture rooms and laboratories has always been, and still is a source of envy on the part of Tokiyo Dai Gakko, or University which includes engineering and the branches of mining, metallurgy, chemistry, telegraphy as within its scope; but has to put up with a lot of rickety wooden shanties, crammed together in a corner, for its accommodation (E. G. Holtham, *Eight Years in Japan*) p. 220.

17. The functions of the Ministry of Public Works (*Kobusho*) were taken over in December 1885 by the Ministry of Communications (*Teishin-sho*).
18. Imperial College of Engineering, General Regulations.
19. 7 yen per month was a substantial sum for many families. Even the lowliest British teacher at ICE received ¥130 per month, while Dyer's salary was ¥660 per month, see Table 5.1.
20. Henry Dyer (1848–1918) the son of John Dyer, was born in Bothwell near Glasgow. Perhaps his father later worked for Shotts Iron Works in Lanarkshire. Henry attended Wilson's School at the Works where Robert McNab his schoolmaster regarded him highly praising his 'uncommon perseverance and industry'. When he left school, after carrying off all the first prizes, he entered the offices of the Shotts Iron Company. Perhaps the family moved to Glasgow to give Henry more opportunities, at any rate he was apprenticed to James Aitken & Co., Foundrymen of Cranstonhill, Glasgow, in 1863 for five years. During this period Dyer also attended evening classes, incidentally at the same



time as Yozo Yamao, at Anderson's College in Glasgow. The College provided scientific and technical classes for artisans in Glasgow to supplement their practical knowledge with theory.

After his apprenticeship ended in the summer of 1868 Dyer applied to the University of Glasgow where John McQuorn Rankine, Professor of Civil Engineering and Mechanics, encouraged him to work for the Certificate of Proficiency in Engineering Science, originally introduced in 1862 and carrying the qualification CE which Dyer obtained in 1871. He then proceeded to qualify for the Glasgow MA and the newly introduced BSc degree which Sir William Thomson and Professor Rankine had been advocating and which was introduced for the first time in 1872.

In 1870 Dyer was successful in winning one of the Whitworth Scholarships, awarded by the Science and Art Department of the Committee on the Council of Education in London as a result of competitive examination, the first Scot to do so. It should be noted that Dyer won in the category for 'workmen' not 'student', see D. A. Low, *The Whitworth Book* (1926) p. 34.

During the later months of 1872 Ito, in the United Kingdom with the Iwakura Mission, was busy arranging for the appointment of staff for the projected Imperial College of Engineering to be opened in Tokyo. According to Laurence Hill, shipbuilder and marine engineer, and former partner to Rankine, Rankine chose Dyer 'as the fittest man for the post' to be Principal and Professor of Engineering. Testimonials were prepared by February 1873 to support his application. They came from Sir William Thomson (Lord Kelvin) (natural philosophy), Hugh Blackburn (mathematics), John Young (natural history), Thomas Anderson (chemistry) all from the University of Glasgow. Dyer had to make do with a warm tribute from McQuorn Rankine, dated May 1871, for Rankine had died suddenly, apparently of diabetes, in December 1872. It was claimed that Kelvin expressed doubts about Dyer's suitability for the principalship, see T. Constable, *Memoir of Lewis D. B. Gordon*, p. 225.

Dyer was appointed to head the ICE before he had taken the degree examinations. A special dispensation was given and early in 1873 he graduated BSc, the first Glasgow student ever to do so, having taken papers specially set for him. He sailed from Southampton for Japan in April 1873.

See Henry Dyer, *Testimonials*, Court Papers, GUA, and Henry Dyer papers, Mitchell Library, Glasgow; D. A. Low, *The Whitworth Book*, p. 151; Obituary in *Nature* (signed C. G. K. which must be Cargill Gilston Knott) 10 October 1918, pp. 109–10.

21. Dyer matriculated at the University in 1868, subsequently his classes were 1868–9 – in *classe physica*, in *classe mathematica*; 1869–70 – in *classe graeca*, in *classe scientiae machinalis*; 1871–2 – in *classe latina*, in *classe graeca*, in *classe physica*; natural history, class 1 zoology, 2 geology; 1872–3 – in *classe logica*, English language and literature class. (Note the entries in Latin.) See Class Lists, GUA.
22. Henry Dyer, as principal of the College was the primary designer of

- the curriculum and the organiser of the courses. Yozo Yamao who had also experienced Glasgow academic courses almost certainly had a strong voice in the decisions, especially on the institution of a 'sandwich' course of theory and practice. Ito probably also advised. Hugh Matheson, who was friendly with Lewis Gordon, himself educated at the Royal Mining Academy in Freiburg and Ecole Polytechnique in Paris, certainly gave advice. Other staff, who with Tadeshi Hayashi, travelled out to Japan with Dyer, were also consulted. The Hochschule at Zurich which Dyer visited in 1882 on his return from Japan, was said to have been the inspiration of the ICE but surely the Glasgow pattern, the only one he knew from his own experience, was strong in Dyer's mind. The British staff were able to create a model engineering college in Tokyo. See also Lewis Gordon's letter to Hugh Matheson (T. Constable, *Memoir of Lewis Gordon*, 1877, pp. 225–8).
23. From the Dyer Collection, Mitchell Library, Glasgow. Letter to Dyer, 25 May 1882, from the Department of Public Works.
  24. Divers was a Londoner, educated at the City of London School and then at the College of Chemistry (1852–3). At the age of 17, in 1854 he had been appointed assistant to Professor Rowney at the University College of Galway where he remained for twelve years, graduating MD there in 1860. Before being appointed to the staff of ICE as Professor of Chemistry, he had had a variety of stop-gap jobs as a lecturer. See J. Sakurai, obituary in *Journal of the Chemical Society transactions*, pp. 746–55.
  25. William Edward Ayrton, 1874–1908, FRS. Ayrton read mathematics at UCL, and entered the Indian Government service; after a year with Kelvin in Glasgow he became Electrical Superintendent in the Indian Telegraph Department. Ayrton returned to London in 1878 to be Professor of Physics first at Finsbury Technical College then at City and Guilds of London Institute, and later still (1907) at Imperial College, the University of London.
  26. Craigie left Japan in poor health in February 1876 and died shortly after returning to Scotland.
  27. W. G. Dixon's book *Land of the Morning*, is inscribed 'to the present and former students of the Kobu dai Gakko, Tokiyo, this book is affectionately dedicated' and contains some useful insights into the College. W. G. features in *Clara's Diary* written by Clara Whitney. W. G. Dixon lived and worked subsequently as a Presbyterian Minister in Victoria, Australia and in Dunedin, New Zealand.
  28. James Main Dixon, MA, St Andrews (1856–1933) travelled widely in the interior of Japan and wrote extensively in *TASJ*. J. M. Dixon took up the professorship of English at ICE at the beginning of 1880; he transferred to the College of Literature at the University of Tokyo in 1886 and remained there until 1892 when he left Japan. While in Japan he wrote *A Dictionary of Idiomatic English Phrases – Specially Designed for the Use of Japanese Students*. He was awarded the Fourth Order of Merit in 1888. J. M. Dixon later taught English and Far Eastern Literature Courses at Washington University, St Louis and

- Southern California University at Los Angeles. He retired in 1911 having earlier become an American citizen, for further information refer to the Keeper of the Muniments, The University Library, St Andrews, Fife, Scotland.
29. John Perry, 1850–1930, graduated as Bachelor of Engineering (BE) at Queen's University, Belfast, 1870. He had also been a research assistant to Kelvin at Glasgow. Like Ayrton, Perry left Japan to return to teach at Finsbury, later the City and Guilds College and eventually at Imperial College, the University of London, 1907.
  30. See L. K. Herbert-Gustar and P. A. Nott, *John Milne, Father of Modern Seismology*.
  31. Fleeming Jenkin (1833–85) first Professor of Engineering in the University of Edinburgh, formed part of the network of those who advised the Japanese on the appointment of British scholars to engineering and scientific posts. He was a broadly cultured man, part of the intelligentsia of Edinburgh and a close friend of the Stevenson family, the lighthouse builders. R. L. Stevenson found him congenial company.
  32. Thomas Alexander (1848–1933) was born in Glasgow and educated first at the Normal School. He studied at the University under J. M. Rankine, winning prizes in mathematics, mechanics, geology and civil engineering. He was granted a Certificate of Proficiency in Engineering Science (CE) in 1870. Alexander remained in Tokyo for seven years. In 1887 he was appointed Professor of Civil Engineering at Trinity College, Dublin, a post which he retained for thirty-four years. See 'School Record Volume' of the *Engineering School of Trinity College, Dublin*, pp. 4–7.
  33. Arthur Watson Thomson (BSc, Glasgow 1874) was recruited to fill Alexander's place in Tokyo but served less than three years before returning to Glasgow to become first Professor of Engineering at the re-organised Glasgow and the West of Scotland College. But Thomson became Professor of Engineering at the College of Science in Poona in 1891. A. W. Thomson and T. Alexander published textbooks jointly over many years.
  34. Thomas Gray, CE, BSc, FRSE (1850–1908) held the position of Demonstrator of Physics and Instructor of Telegraphy at ICE for a period of three years, 'My duties were to lecture on Experimental Physics, on Electricity and to conduct the work of the Physical Laboratory.' See *Testimonials* in favour of Thomas Gray, BSc, FRSE as a candidate (i) for the Cavendish Professorship of Physics in the Yorkshire College, Leeds, (ii) for the Professorship of Natural Philosophy in the Queen's College, Galway, Ireland, Glasgow, 1885 (GUL, Kelvin Collection, Y2.C.13); also *Testimonials* ... for the Chair of Mathematics, Auckland, New Zealand, Glasgow, n.d. (GUL Kelvin Collection, Y1–m.20).
  35. Joji Sakurai, a distinguished Japanese chemist, in his obituary of Edward Divers, comments 'Divers did not publish anything during his first seven years in Japan' because 'his professional duties (at ICE) were very heavy, he was constantly asked by Department of Public Works to undertake analysis of minerals, valuation of ores, assay of gold and silver. He was

- also constantly consulted about the chemical industry in Japan'. J. Sakurai, Obituary in *Journal Chemical Society*, pp. 746–55.
36. The details come from Henry Dyer, *Imperial College of Engineering, General Report by the Principal 1873–7* (Tokei, 1877) held with other Dyer papers in the Mitchell Library, Glasgow.
  37. Natsume Soseki made a sharp comment on J. M. Dixon's teaching 'I was often reproved by Professor Dixon for my wrong pronunciation in reading English poems or prose or for my dropping articles in writing an English composition. He asked such examination questions as "In what years was Wordsworth born and when did he die?" "How many kinds of Shakespeare folios are there?" and "Mention the works of Scott in chronological order". Such questions are of no use in the study of English literature', quoted in *The Introduction of Western Culture into Japan in the Age of her Modernisation*, supplement to *Tokyo Municipal News*, 1967, p. 7.
  38. During the first year the series of books called *The Scientific Reading Book* was prescribed as being 'useful as familiarizing the students with not only facts but also words and expression which they will be frequently meeting with in their after studies'. Collier's *History of the British Empire* was adopted 'being from its subject matter calculated to awaken and sustain interest'. The senior class studied Goldsmith's *The Vicar of Wakefield* which 'unites a large number of excellences as a continuous prose composition', together with Sir Walter Scott's *The Lady of the Lake* which appealed because of the simplicity of its poetry. H. Dyer, *General Report by the Principal* (Tokyo, 1877). In this extensive report each professor wrote fully about his own department.
  39. H. Dyer, *General Report* (Tokyo, 1877). E. Diver's report on chemistry teaching, p. 35.
  40. There is some doubt as to when the laboratory was completed and available for service. Ayrton in his report of 1877 is critical of the laboratory facilities available to him. Yet Perry, his close friend and associate, refers to Ayrton's marvellous laboratory as existing in 1875.
  41. J. Perry, *Central*, 7, 1910, 708. Note that Perry was writing in 1910 some thirty-five years after the time when the laboratory was built. See W. H. Brock, 'The Japanese Connexion, Engineering in Tokyo, London and Glasgow at the End of the Nineteenth Century' (Presidential Address, 1980), *British Journal for the History of Science*, vol. 14, no 48 (1981) pp. 229–43.
  42. Perhaps the best explanation for the reasoning behind the demand for laboratory training comes from J. A. Ewing who, in his inaugural lecture on taking over the chair of Mechanism and Applied Mechanics at Cambridge in 1891, explained that

the idea that the student should be brought face to face with things ... laboratory training to tell how it stimulates interest, how it fosters exactness, how it creates habits of observation and of independent thought, how it makes the dry bones of a science start into life. Facts and principles learnt from the textbook or the lecture

table are colourless and dull: in the laboratory they become vivid and memorable' (J. A. Ewing, *The University Training of Engineers*) p. 14.

43. The Akabane Engineering Works (*Akabane seisakusho*) although founded with Dyer's advice and guidance may always have been intended as a government, rather than a College facility. George Cawley employed as a General Assistant at ICE from 1873 to 1878 referred to his activities 'at the workshops attached to the college and also at the Government Arsenal at Akabane', *Wood and its Application*, pp. 194-232.
44. The works were situated at the north-west corner of Shiba Park near Zojyoji Temple on land formerly occupied by the *Kurume-fiefs yashiki*.
45. When completed the works consisted of:
 

<ol style="list-style-type: none"> <li>1. Drawing office</li> <li>2. Counting house</li> <li>3. Pattern shop</li> <li>4. Foundry</li> <li>5. Brass foundry</li> <li>6. Smithy no 1</li> <li>7. Smithy no 2</li> <li>8. Machine shop no. 1</li> <li>9. Machine shop no. 2</li> <li>10. Fitting shop</li> <li>11. Erecting shop</li> <li>12. Boiler shop</li> </ol>	$\left. \begin{array}{l} 1. \text{ Drawing office} \\ 2. \text{ Counting house} \end{array} \right\}$	at present in part of the former <i>yashiki</i>
		65' × 60'
		120' × 60'
		40' × 70'
		55' × 60'
		76' × 18'
		200' × 50'
		120' × 100'
		200' × 50'
		280' × 35'
		100' × 60'

H. Dyer, *General Report by the Principal* (Tokyo, 1877) the section on the Akabane Engineering Works, pp. 39-45, gives details of the establishment at that time.

46. There were also some forty workmen in the engineering laboratory in the College. Although Dyer was much involved with all aspects of the College, which, at least by some visiting Scots, was referred to as 'Dyer's College', his first love may have been the Engineering Workshops. Although many machines were imported he took special delight in those they made for themselves. As he reported 'In the foundry, for example, we made the cupolas from two old boilers, we had to use wooden moulding boxes until we could make iron ones, and all the ladles and other gear had to be made on the premises. Among our first castings was the gearing for two foundry cranes, and these were afterwards fitted and erected and have since been constantly in use.' It was a special pleasure for Dyer to report that Mr Henry Maudsley 'the well-known engineer' had earlier visited the works at Akabane and 'was quite astonished at the work we carried on'. Dyer, *General Report*, Section on Akabane Engineering Works, p. 39.
47. Professor Kenji Imazu, Department of Humanities, the University of Kobe, most kindly provided a copy of the Catalogue which he located in the Cabinet Library, Tokyo.

48. G. S. Brindley was engineering workshop manager at Akabane. His son, Henry Samuel Bickerton Brindley (1867–1920) was brought up in Japan and attended ICE as a student before returning to Japan as an engineer between 1895 and 1907, *Dictionary of Business Biography*, vol. I, 1984, pp. 448–50.
49. In 1881 the Akabane Engineering Works were prepared to make vertical marine engines which were described as ‘small Double Cylinder Engines’, fire engines, portable hand-cranes, stone breakers and ore crushers, light hand-winchs, improved boring tools, foot lathes, improved timber frames (for sawmill use), hand and force pumps, hydraulic presses (for pressing linseed, cotton rape and other oil-seed) and ornamental gates and railings. See *Catalogue, Akabane Engineering Works*. Notwithstanding the apparent achievements, Japanese historians are more sceptical of the quality of the work at Akabane. M. Kobayashi writes ‘but Akabane Machine Factory of the Industrial Department, with which an order was placed to manufacture 10 spinning frames each with 2000 spindles, had to suspend manufacture after completing one frame, as it turned out to be poor in quality’, M. Kobayashi, ‘Policy of Encouraging Industry’, p. 35.
50. There is some doubt as to the status of the Akabane Engineering Works in 1880. From a translation *History of the Ministry of Works [Kobusho Enkakushi]* in T. Tsuchiya and H. Onchi (eds) *Collection of Materials of Economic and Financial History in the early Meiji (Meiji Zenki Zaisei Keizai Shiryo Shusei)* vol. 17 (Tokyo, 1931). ‘The Workshops ceased to operate in March 1880’, p. 307; ‘Akabane Branch of the Workshops were closed and transferred to the Ordnance Department of the Navy’, p. 308. The confusion and changeover may reflect the political power struggle going on in Japan in 1880 and 1881 during which Okuma was ousted by Ito and his Choshu faction. Making the Akabane Engineering Works into a political football may have strengthened Dyer’s determination to leave Japan, which he did in the summer of 1882.
51. My thanks to Norio Tamaki and his colleagues at Keio University for interpreting the data for this map. The place of origin of each student is given in the reports on ICE.
52. W. G. Dixon, *Land of the Morning*, p. 365.
53. S. Hirokawa, ‘Changing Japanese attitudes’, p. 145.
54. In 1873, when chronically short of money for his education he enquired at:  

the School of Engineering and got a copy of their catalogue. Looking at it I found that there was not a word on how to govern the nation, which was what I had been learning through Chinese studies. There was nothing mentioned but such things as how to build a lighthouse or how to construct a bridge, or, say, how to put up electrical wires. ‘It is meaningless to learn nothing but this sort of thing’ I said to myself and lost all interest in matriculating (K. Koizumi, ‘Japan’s first physicists’, p. 75).
55. Although engineers are not as a category differentiated, see S.

- Yonekawa, 'University Graduates in Japanese Enterprises before the Second World War', pp. 193–218.
56. *ICE Calendar*, Session 1874–5, p. 13, Dyer papers, Mitchell Library, Glasgow.
  57. One professor commented:  
 Not content with attending classes most of the day, making their study encroach on the hours for recreation, and sitting in the common hall of the dormitory until the lights were put out, the more zealous would retire with their books to their rooms and when these also were left in darkness, crouch under the lights in the passages, dressed in their overcoats and mufflers to resist the cold night air (Dixon, *Land of the Morning*) p. 364.
  58. Dyer, *General Report*, p. 33.
  59. Graduates from the other Colleges of the University of Tokyo, 1890–1900 were: law, 1041; medicine, 352; literature, 530; and agriculture, 192. See A. Stead (ed.) *Japan by the Japanese*, p. 253.
  60. W. H. Brock, 'The Japanese Connexion', pp. 229–43.
  61. *Engineering Education in the British Dominions*, published by the Institution of Civil Engineers (1891) gives a useful survey of what was available.
  62. A. Whitworth (ed.) *A Centenary History: A History of the City and Guilds College, 1885 to 1985*, pp. 95 and 96.
  63. See D. Bell, *The Coming of Post-Industrial Society*, pp. 115–16 and 229–32.
  64. Proclamation on Education issued in July 1872 by the Administrative Council, Tokyo, Japan.

## 6 British Life in Japan

1. Probably the best material on life in the Treaty Ports is in the Paul C. Blum Collection held by the Yokohama Archives of History, the kind help accorded there both in 1981 and 1984 was much appreciated. Two books help to set the scene, C. T. Marshall, *Letters from Meiji Japan* and Clara Whitney, *Clara's Diary*.
2. See J. E. Hoare, 'The Japanese Treaty Ports, 1868–1899: A Study of the Foreign Settlements', thesis.
3. For an American missionary's views see R. B. Peery, *The Gist of Japan*.
4. The Chinese soon made themselves a vigorous presence in the treaty ports.
5. W. G. Dixon, *The Land of the Morning*, ch. 5.
6. Hoare, 'The Japanese Treaty Ports', p. 7.
7. Glover & Co., Nagasaki, to Jardine's at Shanghai, 25 March 1869, JM, Nagasaki, B/10/4/578.
8. Hoare, 'The Japanese Treaty Ports' remarks that only the missionaries, the employees of the Japanese and various diplomats attempted to learn Japanese, p. 56.
9. Thomas Blake Glover became a trusted employee of Mitsubishi

- bringing Western expertise and business acumen to their service in Tokyo and Nagasaki. Edward Hazlitt Hunter, after a hesitant start as a young man in Yokohama settled in Kobe where he became a pillar of the foreign establishment. His firm was the Osaka Iron Works. For E. H. Hunter, Shipbuilder, see Chapter 4, note 39.
10. John Reddie Black (1827–80) became a controversial figure editing the *Japan Herald* and starting up his own *Japan Gazette*. But as Altman has explained, 'Japan's new leaders used the press as an adjunct of government.' See A. A. Altman, 'The Press and Social Cohesion', p. 866.
  11. Guide books in English, like *Murray's Handbook of Japan* are a mine of information.
  12. S. Osborn, *A Cruise in Japanese Waters*, p. 24.
  13. Hoare, 'The Japanese Treaty Ports', p. 57.
  14. The steeply sloped cobbled streets are called the *Oranda-Zaka* or Dutch slopes. Glover's house, now the most famous of the foreigners' residences, is designated a National Treasure.
  15. Foreigners claimed that 'the Guard houses erected last year, are unworthy attempts to restore the old Desima system'. *Nagasaki Express*, no. 80, 22 July 1871, Prefecture Library, Nagasaki.
  16. Lady Lawson, *Highways and Homes of Japan*, p. 26.
  17. E. J. Reid, *Japan*, Vol. 2, p. 3.
  18. For some years British consular reports were addressed from Kanagawa although they were coming from an office in Yokohama.
  19. W. G. Dixon, *Land of the Morning*, gives a vivid account of Yokohama in the 1870s, p. 244.
  20. Signor Beato was a photographer sometimes employed by Wirgman to take pictures for the *ILN*, see 7 December 1872, p. 546.
  21. J. Conder, 'Report on the Teaching of Architecture' in H. Dyer, *General Report of ICE*, 1877, p. 13.
  22. 'Public-spirited Smith' for a time commanded the British detachment of Marines.
  23. J. P. Mollison, 'Reminiscences of Yokohama', Lecture, 8 January 1909, p. 7 (copy in Yokohama Archives of History).
  24. *Ibid*, pp. 4–5.
  25. See Dresser, *Japan*, p. 4.
  26. There are detailed accounts of maps and plans available (in Japanese) of town-planning and development of Yokohama.
  27. D. W. Smith, *European Settlements in the Far East*, 1900, p. 31.
  28. Westerners' houses, *Ijinkan*, usually featured a veranda, bay windows, and a red brick chimney. One of the grandest is that of Edward Hazlitt Hunter, with its delicate wooden pillars framing elaborate patterns on the astragals of the windows, see Chapter 14, Section 4.
  29. The latter housed British, American and German families in Western-style houses with gardens. It was a convenience to take over *Yashiki* premises, for these former clan establishments were often large and provided buildings and grounds which could be relatively easily protected. See also C. T. Marshall, p. 4.
  30. St Luke's Hospital is still on its original site. Nearby there is a



- memorial set in a small garden to the first school established by Yukichi Fukuzawa (1835–1901), originally the *Okudaira* clan school, which later became Keio University.
31. E. Seidensticker, *Low City, High City*, pp. 36–42, the English architect T. J. Waters, designed the Ginza brick street.
  32. Ishizaka, H., 'The Slum-dwellings and Urban Renewal', pp. 169–93.
  33. Seidensticker, *Low City*, p. 59, it was hoped that the new brick-built Ginza would be more resistant to fire.
  34. During his service in Japan he learned of the custom of Japanese peasants to seal a document with their thumb-print. His system, using the unique human fingerprint, of personal identification was adopted by the Japanese police on 1 April 1911. The memorial reads, 'Dr Henry Faulds (1843–1930) Pioneer in fingerprint identification lived here from 1874–1886'. Henry Faulds, Licentiate Faculty of Physicians and Surgeons, Glasgow, 1871 (Anderson's College, Glasgow); superintendent Tsukiji Hospital, Tokyo, 1874–86; author of *Nine Years in Nippon* (1885), *Guide to Fingerprint identification*, 1905; see also the *Medical Directory*, 1910, p. 621.
  35. Niigata 'was a failure from the beginning'. Hoare, 'The Japanese Treaty Ports', p. 40.
  36. Thomas Wright Blakiston, an English timber merchant, arrived in Hakodate in 1861. He was an invaluable contact for those whose curiosity, especially about the indigenous Ainu people, took them to the Northern Island. John Milne, Professor of Mineralogy, Geology and Mining at ICE, was a regular visitor to Hakodate. See L. K. Herbert Gustav, *John Milne*, pp. 110–11, and see bibliography for Blakiston's own articles.
  37. The *Daily Advertiser*, Yokohama, 13 September 1875. Copies in the Yokohama Archives of History.
  38. See the *Daily Advertiser*, no. 236, 8 October 1875. The *Japan Punch* also reported in November 1874, 'St Andrews Day, the Banquet wi' neeps', after which he of Islay sang a song in Gaelic which drew tears from the eyes of the editor of the '*Mail*', to conclude in the words of Burns, 'the taties was gran', the neeps were fine and we a' got fu'' (the potatoes were grand, the turnips were fine and we all got drunk).
  39. *Japan Weekly Mail*, 10 November 1883.
  40. *Daily Advertiser*, Yokohama, no. 162, 14 July 1875, and *Daily Advertiser*, no. 271, 18 November 1875.
  41. Dresser, *Japan*, p. 9.
  42. As W. G. Dixon explained, 'So continual were the removals, that auctions came to be an important feature in the foreign life of the city' (W. G. Dixon, *Land of the Morning*, p. 265).
  43. C. T. Marshall, *Letters from Meiji Japan*, p. 75.
  44. Prince Kitashirakawa drew admiring glances, as one lady noted, 'his jaunty moustache, such lively eyes and his black Hussar's uniform' so 'delightfully becoming to his elegant figure'. Marshall, *Letters from Meiji Japan*, p. 78.
  45. Ibid, pp. 112–13 and A. W. Ewing, *The Man of Room 20*, p. 59.

46. But even on holiday the foreigners offended:  
     The landlord, Mr Saiko does not like Europeans or Americans . . . he sets his face against having them as guests in his hotel, because, while he takes great pride in having it clean and bright and in perfect Japanese order, they have not the good manners to take their boots off and behave as becomes the place (E. J. Reed, *Japan*, vol. 2, p. 307).
47. Lady Parkes was the first woman to climb Fujiyama, F. V. Dickens, *Life*, p. 287, but this may also have caused offence for mountains were regarded as deities and women, believed unclean, were forbidden to climb them.
48. G. Lowes Dickinson, *Appearances*, p. 120; see pp. 120–3 for a vivid account of Dickinson's ascent of Fujiyama.
49. A. W. Ewing, *The Man of Room 20*, pp. 60, 61.
50. The origin of the story has attracted much speculation, some believe the original 'Butterfly' was Tsuru Yamamura who married Thomas Glover, see M. Carnes, *Puccini*, 1974, pp. 125–6, see also J. P. Lehmann, 'Images of the Orient', *English National Opera/Royal Opera House Guide to Madam Butterfly*, 1984, pp. 7–14; and J. P. Lehmann, *Japan and the West in the Shadow of Madam Butterfly*, in *Scottish Opera Programme for Madam Butterfly 1987*; the author is indebted to Roger Witts for his help.
51. J. P. Mollison, 1909, p. 8.
52. Ernest Satow after his move to Japan refers to *musume* (girls) and *onna gochiso* (woman feasts) and how without these he became 'badly screwed'. G. A. Lensen, *The Russian Push towards Japan* etc., p. 19. See also the Catalogue of Exhibition on Satow in the Yokohama Archives of History.
53. Lensen, *The Russian Push towards Japan*, p. 6.
54. Francis Brinkley (1841–1912), see *The Introduction of Western Culture*, supplement to *Tokyo Municipal News*, 1967, p. 104.
55. The prefectural library at Nagasaki contained, in 1981, several photograph albums of the Glover family, other albums have since been deposited, see *Asahi Shimbun*, October 1986.
56. They were buried together in the foreigners' cemetery at Kobe where the headstone commemorates:

Edward Hazlitt Hunter  
 a native of Ireland,  
 Born December 3, 1843  
 Died June 1, 1915

For over fifty years a resident in Japan

Also his beloved wife

Ai Hunter  
 Born December 4, 1851  
 Died October 31, 1939.

E. H. Hunter built a fine house in Kita-nu, Kobe. It was removed to the corner of the Zoological Park and has been restored there. The

original island site of Hunter's House can only now be distinguished by the cast iron letter H set at regular intervals into the small wall surrounding the property.

57. Tone was the daughter of the Abbot of the Hakodate Temple of Ganjo-ji, Hoikawa Jokyo, one of the pioneers of the development of Hokkaido. He, together with nearly 400 followers, had arrived in Hakodate to settle and found a temple. Apparently the marriage took place in 1881 in Ranzan-ku Church, Tokyo. *John Milne*, p. 112 and Teiko Morimoto, *Tone Milne*, Tokyo, 1981.
58. The Conders were buried together at Gokokuji Temple, Tokyo. The simple memorial stone reads:

Josiah Conder FRIBA  
Born 28 September 1852  
Died 21 June 1920

and of his wife  
Kume Conder  
Born 16 December 1854  
Died 10 June 1920

‘Life’s work well done, loving and true’

This memorial was erected by Helen, their only child.

59. Satow's biographer, B. M. Allen, does not mention marriage; as far as the *Dictionary of National Biography* were concerned, Satow 'never married'. Yet Satow's dilemma was that of hundreds of other young men. In his case it would have been unthinkable for him to have continued in his chosen career as diplomat had knowledge of his Japanese wife become public. See *DNB, 1922–1930*, p. 748, *Yokohama Archives of History Catalogue of Exhibition on Ernest Satow*, 1984, which gives further detail on O'Kane Takeda (1853–1932); the author is indebted to Nobutashi Hagihara for his help.
60. Some left Japan. Josiah Conder's daughter, Helen, married a Swedish diplomat and lived mostly in Germany. T. B. Glover's daughter, Hana, married an Englishman and probably lived in London. Satow's son Eitaro, visited his father in England but because of chest trouble, settled in La Sal near Denver in the USA. There he changed his name to Alfred Satow, married Lucy and died in 1926. Ernest Satow is believed to have visited Eitaro at least once. Satow's second son, Hisayoshi (1883–1972) became Dr Takeda, a well-known botanist and a founding member of the Japan Mountain Climbers Association.
61. See E. H. Hunter, *Shipbuilder*, ch. 4, note 39.
62. J. P. Mollison, 'Reminiscences', p. 8; and C. T. Marshall, 'Letters', p. 55. Sadly, Lady Parkes went home to die, see *London and China Telegraph*, 26 November 1879.
63. See C. Haffner, *The Craft in the East* and various other papers. Despite the secrecy which is endemic in the Freemasons, help has kindly been given by the Right Honourable Earl of Elgin and Kincardine and Dr Charles Munn.
64. The first Japanese Freemason appears to have been Viscount Tadeshi

- Hayashi, who was initiated into the Order at the end of the century while Minister in London.
65. The Hyogo and Osaka (Lodge No 498) (Scottish Constitution) in 1870, had twenty founding members. There were twenty-four founding members of the Star in the East (Lodge No 640) which was chartered in Yokohama on 1 May 1897. Other members were American or Canadian. These two lodges remain in existence today.
  66. The Foreign Secretary insisted that the Japanese government's prohibition was 'aimed at political conspiracies and other analogous criminal efforts', and that this would not affect the activities of the Freemasons, whose 'benevolent efforts' he himself had judged during his residence in Berlin.
  67. *London and China Express*, 25 July 1984.
  68. Alexander Michie was sharply critical. A. Michie, *An Englishman in China*, vol. 2, p. 125.
  69. J. E. Hoare, 'Japan undermines extraterritoriality', I. H. Nish and C. Dunn (eds) *European Studies on Japan*, pp. 125–9.
  70. 'The system does not work well', H. Faulds, *Nine Years in Nippon*, p. 301.

## 7 The Iwakura Mission

1. C. Blacker, 'The first Japanese Mission to England'; see also *The Times*, 30 August 1865.
2. W. G. Beasley, 'The Iwakura Mission in Britain, 1872'; M. J. Mayo, 'Rationality in the Meiji Restoration, the Iwakura Embassy'; and A. A. Altman, 'Guido Verbeck and the Iwakura Mission'.
3. The British referred to 'the loud and fussy hospitality of America', *The Times*, 29 July 1872, and 'the bombastic reception given to the Japanese in America', *The Times*, 2 August 1872; see also Note 10 below.
4. Tomomi Iwakura, 1825–83, see biographical details in Appendix B, and *The Times*, 2 August 1872.
5. These men were all government ministers, Iwakura being Minister for Home Affairs, Kido being in the Ministry of the Imperial Household, and Ito, Minister of Public Works and Yamaguchi, Assistant Minister of Foreign Affairs. See also biographical details in Appendix B.
6. Other senior figures in the delegation included the former feudal lords of Choshu, Saga, Fukuoka and Kanazawa as well as two court nobles. For a list of the names and ranks of the officials of the Embassy see S. Mossman, *New Japan*, pp. 430–1.
7. As was noted 'the five young ladies represent five distinct families, aristocracy and wealth combined', S. Mossman, *New Japan*, p. 434.
8. M. J. Mayo, 'The Western Education of Kume Kunitake, 1871–6'.
9. J. E. Hoare, 'Japan Undermines Extraterritoriality: Extradition in Japan 1885–1899', in Nish and Dunn, *European Studies on Japan*.
10. See M. J. Mayo, 'A Catechism of Western Diplomacy: The Japanese and Hamilton Fish, 1872', pp. 389–410.

11. Kido wrote, 26 March 1872, 'We have already lost this round', S. D. Brown and A. Hirota (eds) *The Diaries of Kido Takayoshi*, vol. II, 1871–1874, p. 143.
12. It was unfortunate timing, the British ruling classes were in general on holiday, on the grouse moors of Scotland, *The Times*, 17 August 1872.
13. This is the caption on large picture showing Queen Victoria's farewell to the Embassy in Diplomatic Archives, Tokyo.
14. William G. Aston (1841–1911), interpreter at the British legation from 1862. Along with Satow and B. H. Chamberlain, Aston was regarded as one of the influential foreign scholars in Meiji Japan. He translated the *Nihongi* (1896) and wrote works on Japanese literature and Shinto.
15. Major General Alexander may have been Sir Claude Alexander (1831–99) of Ballochmyle, Ayrshire and Southburn, Renfrewshire, MP for South Ayrshire, 1874–85.
16. Lord Blantyre (1818–1900), seats at Erskine House, Renfrewshire and Lennoxlove, Haddingtonshire, Scotland, succeeded father, 1830, owned about 14 000 acres. See *Glasgow Post Office Directory*, 1881–2.
17. Kido, *Diary*, vol. II, p. 231.
18. The *Glasgow Herald* reported the visit of the ambassadors on 8, 9, 10, 11, 12 and 14 October 1872 and the *Scotsman*, 11 October 1872.
19. M. J. Mayo, 'The Western Education of Kume Kunitake', p. 30.
20. The *Scotsman*, 12 October 1872.
21. See Craig Mair, *A Star for Seamen*, pp. 133–4.
22. Commissioners for Northern lights, Edinburgh. Extracts from Board Meetings, 9, 14 and 17 October and 27 November 1872.
23. Kido, *Diary*, vol. II, 5 October, p. 226.
24. *Manchester Guardian*, 9 October 1872.
25. *ILN*, 1 October 1853. At the opening of 'the stupendous model mill' in 1853 the Mayor of Bradford eulogised the 'palaces of industry equal to the palaces of the Caesars'.
26. *The Times*, 28 April 1886.
27. As Brunton explained, 'Ito put himself under my wing', Brunton, 'Pioneering Engineering', WEG Papers, pp. 116–17.
28. Another small group, under the guidance of Provost Swan of Kirkcaldy, visited floor-cloth manufacturers and linen works. The visit of 'these distinguished Orientals caused a good deal of sensation in the district', the *Scotsman*, 12 October 1872.
29. Takato Oshima's career was remarkable. He worked on the problems of the reverberatory furnace before the restoration, examined the mining industry in Britain, as part of the Iwakura Mission, and subsequently struggled with the problems of iron-smelting at Kamaishi Iron Works, see Chapter 15 below, and E. Pauer, *Japan's Industrielle Lehrzeit*, p. 534, and S. Oshima, *Oshima Takato Gyojitsu (Life and Work of Oshima Takato)*.
30. S. Oshima, *Oshima Takato Gyojitsu*; my thanks to Kazuhiko Uejima for his work on the translation. *The Times*, 27 September 1872 (report from *Western Morning News*).
31. Kido commented particularly on the telegraph office, in London 'where 400 men and 700 girls crowd in to work daily . . . and this year's

- profit amounts to £300 000. We saw metal tubes for sending messages and telegraphic equipment of a sort we had not previously observed.' On the post office, he noted that '2000 workers handle the business every morning and 800 come to work in the afternoons ... and its annual profit amounts to £1 410 000,' S.D. Brown, *Diary of Kido Takayoshi*, vol. II, pp. 217–18.
32. W. G. Beasley, 'The Iwakura Mission in Britain, 1872', p. 30.
  33. *The Times*, 16 September 1872.
  34. S.D. Brown, *Diary of Kido Takayoshi*, vol. II, 20 October 1872, p. 238.
  35. Before the Restoration, 'The prohibition of Christianity is the first rule of the Tokugawa House ... the *Bakufu* can never ignore or overlook the evils of Christianity,' Tokugawa Nariaka to *Bakufu*, 14 August 1853; see D. J. Lu, *Sources of Japanese History*, p. 10.
  36. *The Times*, 22 March 1870, and 6 and 16 March 1872. The reports of 6 March consist of a gruesome description of torture and crucifixion of Japanese Christians in Nagasaki and that of 16 March 1872 an apparent reference to the earlier report as inaccurate.
  37. W. G. Beasley, 'The Iwakura Mission in Britain', October 1981, p. 30.
  38. J. Pittau, *Political Thought in early Meiji Japan, 1868–1889*, p. 37.
  39. *Ibid*, p. 42.
  40. Marlene Mayo believes that over 200 industrial visits were made in all, M. Mayo, 'Western Education', p. 38.
  41. Kido's *Diary*, translator's introduction, vol. II, XXVI.

## 8 Towards an Educational Philosophy

1. C. R. Boxer, *Jan Compagnie in Japan, 1600–1817*; and *The Dutch Seaborne Empire*.
2. Useful books include: M. Jansen, *Sakamoto Ryoma and the Meiji Restoration*; R. Dore, *Education in Tokugawa Japan*; R. F. Hackett, *Yamagata Aritomo in the Rise of Modern Japan, 1838–1922*; H. Passin, *Society and Education in Japan*; and J. Pittau, *Political Thought in early Meiji Japan, 1868–1889*.
3. See W. G. Beasley, 'Politics and the Samurai Class Structure in Satsuma 1858–1868', pp. 47–58; W. G. Beasley, 'Political Groups in Tosa 1858–1868'.
4. A. M. Craig, *Choshu in the Meiji Restoration*; and A. M. Craig, 'The Restoration Movement in Choshu' in Hall and Jansen, *Studies*.
5. There is material on the Foreign Office and the *Satsuma* clan in FO papers, PRO; in Sir Harry Parkes papers, ULC; see also Chapter 1, Section 4 above.
6. I. P. Hall, *Mori Arinori*, is the important source for this section.
7. For Mori's views as his career developed see Pittau, *Political Thought in early Meiji Japan*, especially, pp. 52–4, pp. 178–81 and pp. 260–1.
8. Hall, *Mori Arinori*, p. 54.
9. *Ibid*, p. 33.
10. See Chapter 1, section 8, note 74. The British also suffered casualties, see the memorial plaque in the Yokohama Archives of History,

- formerly the British Consulate General, Yokohama. For an anti-British polemic, see E. H. House, *The Kagoshima Affair*.
11. When Mori was accepted into the school he became eligible for a clan stipend, thereafter he and others, who later emerged as *Meiji* leaders, were being supported by the clan.
  12. Tomoatsu Godai (1835–85) – see biographical details, Appendix B.
  13. Munenori Terajima (1832–93) – the commitment of Terajima to Western learning had been much strengthened when, before the attack on Kagoshima, he had been taken prisoner by the British and had subsequently been forced to watch the bombardment and resultant burning of Kagoshima from the relative safety of a British warship, see biographical details, Appendix B.
  14. See Chapter 1, Section 4, Note 28.
  15. See A. Taylor, *Laurence Oliphant*, pp. 57 and 129–30.
  16. F. V. Dickens, a lawyer and old ‘Japan hand’, wrote vol. II of *The Life of Sir Harry Parkes*, being Parkes’s life in Japan.
  17. Hall, *Mori Arinori*, p. 80.
  18. *Ibid*, p. 105.
  19. W. P. Swainson, *Thomas Lake Harris, Mad or Inspired?*
  20. Anne Taylor, the latest biographer of Laurence Oliphant describes Harris as an ‘evil charlatan’, p. 258.
  21. See H. Schneider and G. Lawton, *A Prophet and a Pilgrim*.
  22. Hall, *Mori Arinori*, p. 104.
  23. *Ibid*, p. 114.
  24. The Japanese government could not afford to dispense with the services of such men who were conversant with the West and spoke good English. Their interpretative skills later ensured relatively smooth relations with the outside world.
  25. H. Mutsu, ‘The Diplomatic and Consular Service of Japan’.
  26. M. J. Mayo, ‘A Catechism of Western Diplomacy’.
  27. Kido commented that Mori’s behaviour was ‘the height of discourtesy’. See S. D. Brown and A. Hirota, *The Diary of Kido Takayoshi*, vol. II, 7 April 1872, and 15 April 1872.
  28. Tatsui Baba (1850–88) publishing in London, in 1873, his *Elementary Grammar of the Japanese Language* deplored Mori’s suggestion, writing ‘There is not the slightest proof, about the impossibility of establishing popular education through our native speech.’
  29. The *Japan Weekly Mail* fulminated, ‘Mr Mori has proved himself so impractical and reckless a missionary in his educational views, that little apology need be offered for our having paid no attention in England to his vagaries’, *Japan Weekly Mail*, 19 July 1873.
  30. Hall, *Mori Arinori*, p. 251; this marriage however, was not successful.
  31. See Appendix C and T. R. H. Havens, *Nishi Amane and Modern Japanese Thought*.
  32. The founder-members of the Meirokusha included Yukichi Fukuzawa. In 1875 Fukuzawa had the *Enzetsukan* (*enzetsu* means public speech) built at the Mita Campus of Keio University. The *Enzetsukan* still stands, embellished with traditional *namako-kabe* black tile plates

- set with white-mortar in criss-cross form. The interior is pure New England Meeting House.
33. The *Seiyoken* restaurant, mentioned in Griffis's *Tokyo Guide* of 1874, provided Western food. The restaurant survives but was moved long ago to Ueno Park.
  34. See A. A. Altman, 'The Press and Social Cohesion during a Period of Change'.
  35. E. Shima, 'Darwinism in Japan, 1877-1927'.
  36. See D. Duncan, *Life and Letters of Herbert Spencer*.
  37. Mill published *Logic* (1843) and *The Principles of Political Economy* (1848). These were followed with *On Liberty* (1859) which emphasised the importance of the individual. These issues posed problems in Japan where conformity and consensus were believed to have higher value. In addition Mill's writing *On the Subjection of Women* (1869) secured for him an honoured place among those from all countries, including Japan, who sought to raise women's status in society.
  38. Adam Smith's arguments were difficult for Japanese to understand and interpret at this time. It was the relatively simple work by John Hill Burton (1809-81) on *Political Economy* which Yukichi Fukuzawa incorporated into *Seiyō jijō* (*Conditions in the West*); see A. M. Craig, 'John Hill Burton and Fukuzawa Yukichi', Fukuzawa Memorial Center for Modern Japanese Studies, Keio University, Tokyo, 1984.
  39. See S. Yamashita, 'Herbert Spencer in Meiji Japan' in H. Conroy *et al.*, *Japan in Transition*, p. 80.
  40. J. D. Pierson, *Tokutomi Soho, 1863-1957*, ch. 4.
  41. During his Harvard years as a law student in the 1870s Kentaro Kaneko was influenced by John Fiske, a former Professor of Philosophy. Through Fiske, who argued Spencer's theory of social evolution sympathetically, Kaneko came to understand Spencer's objectives. See also Kodansha, *Encyclopedia of Japan*, vol. 4, p. 138.
  42. D. Duncan, *The Life and Letters of H. Spencer*, p. 161.
  43. *Ibid.*, quoting letters of 21 and 23 August 1892 (pp. 319 and 321) to Kaneko Kentaro.
  44. *Pall Mall Gazette*, 26 February 1884.
  45. This was a controversial posting, many senior men regarding Mori as a 'Westerniser Reprehensible'. Only Ito, with the Emperor's backing, was able to push the appointment through.
  46. Hall, *Mori Arinori*, p. 397.
  47. Graduates from the Imperial University unique until 1897 in having 'university status' were permitted to enter without further examination the ranks of the higher civil service.
  48. All the attendance problems with which the Japanese struggled from 1872 had been experienced in Western countries during the nineteenth century.
  49. The idea of bringing order and discipline into young lives was also popular in the West. But here the inspiration came from Sunday School teachers. The Boys Brigade and similar organisations which brought leisure and outdoor pursuits to countless youths were run through the Christian Church.



## 9 Students

1. The Emperor's 'Charter Oath' of April 1868, see R. Tsunoda, W. T. de Barry and D. Keene, *Sources of Japanese Tradition*, p. 644. See also D. Kikuchi, 'Sketch of Japanese National Development', PRSE vol. XXVII, part IV, 1907.
2. For the purpose of this study records have been searched at UCL King's and Imperial College, the University of London; the Universities of St Andrews, Glasgow, Aberdeen and Edinburgh in Scotland; the Universities of Manchester and Newcastle upon Tyne, several Colleges in Cambridge and Balliol College, Oxford. Because of the nature of the records kept, the University of Glasgow (GUA) has proved the most fruitful source. All the archivists are thanked for their kind help.
3. See Mr Kadono's comments during discussion, H. J. Edwards, 'Japanese Undergraduates at Cambridge University', *JSL*, vol. VIII, p. 56.
4. At Pembroke College, Cambridge, Koyata Iwasaki, the eldest son of Baron Yanosuke Iwasaki gave the name of his guardian as Viscount Hayashi, the Japanese Ambassador in London.
5. A. B. Mitford (Lord Redesdale) *Garter Mission to Japan*, 1906 pp. 255-6.
6. The third son of Tomomi Iwakura, who was staying in America and Europe between 1870 and 1878, attended at Balliol in the Hilary Term of 1874, but did not graduate. Tomotake Minami-Iwakura, 1st Baron—in Oxford for several years in the 1890s—graduating BA in 1895 and taking his MA in 1899. See *Balliol College Register*, pp. 81, 208 and 187.
7. The portrait as the frontispiece to J. H. Gubbins, *The Making of Modern Japan*, is of Prince Iwakura.
8. J. H. Gubbins's appointment as lecturer in Japanese was confirmed by a Decree before Congregation of the University of Oxford, 25 May 1909. His appointment had been preceded by that of J. H. Longford who had been Professor of Japanese at King's College, London, between 1903 and 1916/17. Longford had earlier served for many years in Japan as a Consular official.
9. See J. A. A. Stockwin, *Why Japan Matters*, Inaugural Lecture, University of Oxford, 27 January 1983; and G. Bownas, 'From Japanology to Japanese Studies', Inaugural Lecture, University of Sheffield, 14 December 1966.
10. The *Japanese Club at Cambridge*, Seventh, Eighth and Ninth Meetings, May and Michaelmas Term, 1891, and Lent Term, 1892, Cambridge, n.d. (GUL, Stack, Education R5-1916-C). *Japanese Club at Cambridge*, 1890-3, 6 issues (transactions of the 4th-11th meetings) bound in one volume, *Yokohama Archives of History* (Paul C. Blum Collection) 1226 [K.IV.35].
11. See E. F. B. Macalister, *Sir Donald Macalister of Tarbert*, p. 261. It is almost certainly Sir Donald's copies of the reports of the Society which are in Glasgow University Library.
12. See M. Sanderson, *The Universities in the Nineteenth Century*, 1975, p. 70, where under the heading 'Scottish Philosophy versus Cambridge Mathematics, 1836', Sanderson remarks that 'While philosophy was a forte in Scottish Universities, its study of mathematics was far behind

- that of Cambridge and excessively philosophical rather than quantitative in character. This held back Scottish mathematics-based sciences.'
13. J. Howarth, 'Science Education in late Victorian Oxford: A Curious Case of Failure?'
  14. D. Bennett, *King without a Crown*, p. 152.
  15. James Stuart (1843–1913) the first occupant, resigned from the Chair 'after much quarrelling and discord'. Stuart advised, when Cambridge was looking for a replacement 'Try Ewing at Dundee, I can think of no one better, or so good.' See T. J. N. Hilken, *Engineering at Cambridge*, p. 105.
  16. James Alfred Ewing (1855–1935) a Dundee man, had been educated at the University of Edinburgh. He came to Cambridge from Dundee where he had established engineering as a teaching subject. See J. A. Ewing, *An Engineer's Outlook*; and A. W. Ewing, *The Man of Room 40*.
  17. J. Perry, 'Oxford and Science', *Nature*, 31 December 1903, pp. 208–14.
  18. Dairoku Kikuchi (1855–1917); in England 1866–8 and 1870–7; attended University College Preparatory School; graduated BA at UCL in 1875. After returning from Cambridge in 1877 Kikuchi was appointed to the University of Tokyo, President of the university between 1898 and 1901; 1901–3 Minister of Education.
  19. Suyematsu was elected to the Japanese Diet in 1890 and created Baron in 1895 and Viscount in 1907. He served in the government of 1900 as Minister of the Interior. Suyematsu wrote of his tutor at Cambridge 'who took much pains during my stay at Cambridge in teaching me English and Roman laws, as well as the law of nations'. Kencho Suyematsu, *The Risen Sun*, p. ix.
  20. Manjiro Inagaki (1861–1908) from Hirado; attended University of Tokyo, had matriculated as a non-Collegiate student at the Michaelmas Term 1886, and was admitted to Caius College, January 1888, graduated BA 1889; Japanese Minister in Madrid and died there 26 November 1908. A copy of *Japan and the Pacific* is in the library of Gonville and Caius College, Cambridge; my thanks to Jeremy Prynne.
  21. Paper by Alon Kadish (of the Hebrew University of Jerusalem), 'Schools of Economics at Cambridge c.1885', for section on Soyeda see pp. 34–6. Thanks to Professor Watarai, Meiji Gakuin University, for a copy of this paper.
  22. Henry Fawcett had been appointed to the Cambridge chair of Political Economy in 1863. When he died in 1884 Alfred Marshall succeeded.
  23. Juichi Soyeda (1864–1929). On his return home he became private secretary to the Minister of Finance and then at the age of 35, Vice-Minister. Later he served as President of the Bank of Formosa (1899) and then as founding President of the Industrial Bank of Japan (1902). He served in Okuma's cabinet in 1915. From 1893 he acted as Foreign Correspondent of the Royal Economic Society in London. See T. Johnes's *Obituary in EJ*, September 1929.
  24. C. R. Ashbee's *Journal*, 1 November 1885, King's College Modern Archives, Cambridge.

25. For one volume of papers of the Cambridge Economic Club see Camb. C291.283 ULC, see also large brown box, Marshall papers, Marshall Library, Cambridge.
26. J. Soyeda, 'The Study of Political Economy in Japan', *EJ*, June 1893, pp. 334–9.
27. Nagotoshi Kuroda, was admitted to King's College in October 1907 but had to write to his tutor, Oscar Browning, 'I am terribly ashamed of the results of the Mays.' He spent the summer 'up in Cambridge and coached with Mr Mitchell' before taking the exams again – 'the Additional's' – in September. Unlike his older brother Nagashige Kuroda, who graduated BA in 1887, and MA in 1891, the younger Kuroda did not graduate. See Kuroda Correspondence, King's College Modern Archives, King's College, Cambridge, 28 August 1908.
28. *Japan Society 4th Annual Report*, Cambridge, 1888, frontispiece (copy in Yokohama Archives of History, cat. no. K.IV.35).
29. *The Independent*, 1 April 1887.
30. The University of London was founded by Royal Charter in 1836 with two constituent Colleges, University College (1828) and King's College (1831). The University as such was an examining and degree-awarding body. In 1898 the University of London's status changed and other suitable institutions were allowed to join. One important development was the formation in 1907 of Imperial College of Science and Technology which was created from elements of the old City and Guilds College, Finsbury, as well as the School of Chemistry, the Royal School of Mines and the Royal College of Science. The London School of Economics and Political Science was established in 1895.
31. Yakichi Nomura was known in Japan as Masaru Inoue.
32. For details of individual Satsuma students see T. Inuzuka, *Satsumahan, Eikokuryugakusei (Satsuma students to England)*, Tokyo, 1974, p. 174; the author is indebted to Tamotsu Nishizawa for his help.
33. On this occasion Williamson wrote 'These young men cannot avail themselves of the full laboratory course but wish to enter the laboratory as students for one year working three to four hours a day', UCL College Correspondence, 24 July 1865.
34. See 'The Japanese at the Copper Mines at Alderly Edge', the *Courier and Herald*, Macclesfield, 16 September 1865, and for the visit to the Britannia Ironworks in Bedford, *The Times*, 2 August 1865.
35. Sakurai's impressive performance was crowned in 1879 when he won the Companies Exhibition. Their clerk wrote:  

The Court has accepted Mr J. Sakurai nominated for the Companies Exhibition in connection with University College, London for 1879. The number of candidates is noted to continue small – it is strange that a Japanese should succeed as against English youths in a competition in Chemistry and Physics (College Collection, Letters, 20 August 1879, UCL).
36. See T. Inoue, 'The Story of the Introduction of Modern Economics to

- Japan: W. S. Jevons and Seven Japanese Students', *Osaka Commercial University Review*, no. 54, 1979, pp. 95–115.
37. G. E. Davie, *The Democratic Intellect, Scotland and her Universities in the Nineteenth Century*.
  38. Kanae Nagasawa (1852–1934) had been at school in Aberdeen, see A. Shewan (compiler) *Aspirat Adhuc Amor*, Aberdeen, 1923, p. 364; Nagasawa was also involved with Thomas Lake Harris, see P. Kagan, *New World Utopias*.
  39. William Thomson is referred to throughout as Kelvin. Thomson was knighted in 1866 and became Baron Kelvin of Largs in 1892. Lord Kelvin's papers are held in the University of Cambridge Library (see D. B. Wilson, *Catalogue of Manuscript Collections*; also at the University of Glasgow, in the Library and in the Department of Natural Philosophy). Kelvin was a Scot by adoption, born in Belfast of Scottish parents. See S. P. Thompson, *The Life and Work of William Thomson*; A. G. King, *Kelvin the Man*, and J. I. Sharlin, *Lord Kelvin, the Dynamic Victorian*.
  40. M. Sanderson, *The Universities in the Nineteenth Century*, p. 84.
  41. A. G. Clement and R. H. S. Robertson, *Scotland's Scientific Heritage*, p. 127.
  42. 'The appointment of Professor Lewis D. B. Gordon', University of Glasgow, Faculty of Engineering, privately printed, n.d., c.1980.
  43. The Regius Chair of Engineering at the University of Glasgow was established in 1840. See G. J. N. Hilken, *Engineering at Cambridge University 1783–1965*. Regius Chairs were Crown appointments, now proudly held by Universities, but then imposed by government on conservative senates.
  44. Founded as Anderson's Institution (1796) by Professor John Anderson it became Anderson's University (1828), Anderson's College (1877), then reorganised as Glasgow and the West of Scotland Technical College (1886). In 1912 it became the Royal Technical College, Glasgow, and then in 1956 the Royal College of Science and Technology. Its final metamorphosis came in 1964 when the Royal College of Science and Technology merged with the College of Science to become the University of Strathclyde.
  45. Yozo Yamao (1837–1917) studied science and technical subjects at UCL London and Glasgow. He served in the *Meiji* government.
  46. H. Dyer, *Dai Nippon*, 1905, p. 2.
  47. For a discussion of the Royal School of Naval Architecture and Marine Engineering at South Kensington (1864) see *TINA*, vol. XVIII, 1877, pp. 361–78.
  48. J. F. C. Conn, University of Glasgow, Department of Naval Architecture and Ocean Engineering, 1883–1983, privately printed, Glasgow, 1983.
  49. Personal correspondence from Mr Koichi Katsura, Tokyo, 24 February 1987.
  50. The Yamao family treasure planes and saws used by Yozo Yamao at Napier's Yard; my thanks to Shinichi Yamao for his kind help.
  51. Class Prize Lists, 1881–2, GUA.

52. Court Minutes, 7 February 1901, GUA, the candidates in March/April 1901 were Sampachi Yukuzawa, Tatsuzo Kajima and Konji Satow, in September/October 1901, Tomochika Iwanae; Natsume Soseki was the examiner.
53. During his leisure hours 'he habitually rode on a modern motor cycle all over Scotland as a hobby, which at that time only rich and adventurous people could do'. Personal correspondence from Mr Koichi Katsura, Tokyo, 24 February 1987.
54. The University of Edinburgh did not attract Japanese students as did Glasgow. Fleeming Jenkin became the first holder of the Chair of Engineering in 1868. Koichiro Sugi studied there, learning Engineering Drawing after 1872. See Chapter 5, section 3 above.
55. The federal Victoria University originated in Manchester in 1880. Liverpool joined in 1884 and Leeds in 1887.
56. Armstrong College was the scientific and technical College in Newcastle but was part of the University of Durham. See E. M. Bettinson, *The University of Newcastle, 1834-1971*.
57. The English believed that engineers should be trained in the works and on the job, see Sanderson, *Universities in the Nineteenth Century*, p. 110.
58. Sir Henry Enfield Roscoe (1833-1915) a chemist; educated in London and Heidelberg; close friend of Bunsen; Professor of Chemistry at Owens College, Manchester, from 1857 to 1887; author with Schorlemmer of standard treatise on Chemistry; knighted in 1884. H. E. Roscoe, *The Life and Experiences of H. E. Roscoe*; see also M. Sanderson, *Universities*, pp. 79-80; Roscoe's book, *Lessons in Elementary Chemistry* (1871) was translated into Japanese in 1876, as *Rosuko Shikagaku*; see K. Fujii, 'Atomism in Japan', p. 154.
59. M. Sanderson, *Universities*, p. 109.
60. H. E. Roscoe, *The Life*, pp. 113 and 114.
61. On 18 February 1879 Professor Roscoe presented a paper by one of his Japanese students, Mr Sadama Ishimatsu, 'On the Chemical Investigation of Japanese Laquer (sic) or Urushi', see *Memoirs and Proceedings of Manchester Literary and Philosophical Society*, 1882, pp. 249-61. Another Manchester student 'Ichikawa, who studied Physics under the late Professor Balfour Stewart in Manchester, was a man of much originality', S. Okuma, *Fifty Years of New Japan*, vol. II, p. 255.
62. See *Durham University Journal*, 23 May 1885, quoted in Sanderson, *Universities*, pp. 166-7, for a list of the remarkable range of technical experts produced at the Newcastle College.
63. M. Sanderson, *Universities*, pp. 215-16, for Joseph Chamberlain's role in achieving the Faculty of Commerce, see B. M. D. Smith, *Education for Management*, p. 1.
64. British Universities resisted the idea of formal 'doctoral programmes', wherever research students were accepted it was done informally.
65. Koizumi, 'Japan's First Physicists', p. 77.
66. See *Japan Biographical Encyclopaedia*, 1961, p. 1832 and B. Baker, *The Forth Bridge*.
67. Kelvin papers, NB168, ULC, 25 June 1904.

68. Shida's correspondence with Kelvin, Kelvin papers, S126-S130, UCL.
69. See Y. Markino, *A Japanese Artist in London*, 1910, for the most revealing study of a Japanese student's life.
70. Quoted in *Entrepreneurship: The Japanese Experience*, Electronics Industries Association of Japan, no. 3, Tokyo, June 1982, p. 10.
71. T. J. N. Hilken, *Engineering at Cambridge*, p. 97.
72. J. A. Ewing, *Inaugural*, 1891, p. 15.
73. Baelz believed that the Japanese thought of Western science as 'a machine which can without further ado be transported from the West to any other part of the world there to continue its labours', S. Hirakawa, 'Changing Japanese Attitudes to Western Learning', *Contemporary Japan*, vol. XXIX, September 1968, pp. 145-50.
74. See Hirakawa, vol. XXIX, 1968, p. 140; and Koizumi, 'Japan's First Physicists', p. 98.
75. A. K(uwaki), *Nagaoka Anniversary Volume*, p. iii.
76. In 1911 when Rutherford proposed the nuclear atom he had not 'looked up' the paper or heard of the model which Nagaoka had prepared in 1903, K. Koizumi, 'Japan's First Physicists', p. 94.
77. For a self-evaluation of modern Japanese science see Anon., 'Japan (1): On the Threshold of an Age of Big Science', *Science*, 2 January 1980, p. 32.
78. S. Hirakawa, 'Changing Japanese Attitudes to Western Learning', vol. XXVIII, *Contemporary Japan*, vol. XXVIII, no. 3, May 1966, p. 560.

## 10 In the Shipyards

1. A. J. Marder, *British Naval Policy 1880-1905*: A. J. Marder, *Old Friends; New Enemies*.
2. S. Pollard and P. L. Robertson, *The British Shipbuilding Industry, 1870-1914*.
3. M. S. Moss and J. R. Hume, *Clyde Shipbuilding from old Photographs*, 1975; *Workshop of the British Empire*.
4. D. Dougan, *The History of North-East Shipbuilding*.
5. F. E. Hyde, *Liverpool and the Mersey*.
6. M. S. Moss and J. R. Hume, *Shipbuilders to the World, Harland & Wolff*.
7. See A. Slaven, *The Development of the West of Scotland, 1750-1960*; J. L. Carvel, *Stephen of Linthouse*; Moss and Hume, *Workshop of the British Empire*; J. Burrow (ed.) *Denny, Dumbarton*; G. B. Hunter and E. W. De Rusett, '60 years of Merchant Shipbuilding on the North-east Coast', *TIESS*, vol. 52, 1908-9, pp. 323-46, *Scientific Survey of North-eastern England*; M. Dillon, *Palmer's Shipbuilding and Iron Company Limited*.
8. Captain J. M. James, sent as 'the Mikado's Navigating Lieutenant' to guide HJMS *Takachiho Kan* in 1886 from the Tyne to Japan, 'flatly refused to take her to sea without sails'; the shipbuilders agreed to 'rig stay sails' and the vessel steamed away, S. Mavor, *Memories of People and Places*, pp. 236-7.

9. D. L. Burn, *The Economic History of Steel-making, 1867-1939*, 1940, and P. L. Payne, *Colvilles and the Scottish Steel Industry*.
10. E. C. Smith, *A Short History of Naval and Marine Engineering*; J. Guthrie, *A History of Marine Engineering*.
11. J. Briggs, *Naval Administration*, p. 306.
12. R. Appleyard, *Charles Parsons*.
13. As J. A. Ewing wrote, 'The *Turbinia*'s performance at Queen Victoria's Diamond Jubilee was as amazing as it was audacious'. J. A. Ewing, *The Man of Room 40*, p. 106.
14. I. Jung, *The Marine Turbine*, Part I, *The days of Coal and Steam, 1897-1927*, p. 15.
15. See A. J. Marder, *Fear God and Dread Nought*, and *From Dreadnought to Scapa Flow*.
16. W. Ashworth, 'Economic Aspects' pp. 499 and 504; and E. W. H. Tennyson D'Eyncourt, *A Shipbuilders Yarn*, on Jacky Fisher, Chapter IX.
17. F. E. Hyde, *Cunard and the North Atlantic, 1843-1973*.
18. The name of 'K. Kawada serving from January 8 to March 2, 1915' does appear in the Apprentice Time Book of Simon Lobnitz, but this is exceptional, GUA, UCS 4/7/1.
19. The only reference, in English, to Yamao's studies in Glasgow comes from Henry Dyer, *Dai Nippon*, p. 2.
20. In the case of the father, Riokichi Kawada, the following commendation has been found:

Lobnitz & Co.  
Engineers & Shipbuilders  
Renfrew

Slip Dock, Renfrew  
Scotland  
24 May 1884

This is to certify that Mr Kawada Riokichi has served us as an Engineering Apprentice, from September 1877 to this date, and has gone through all the various branches of Patternmaking, Engineering as well as Drawing Office departments. He has during all this period always given us the greatest satisfaction, both as to character and ability.

We consider him a first rate workman, as well as a very good draughtsman, with a very good knowledge of all branches connected with Marine Engineering, and he has always performed the work entrusted to his care, with great ability and to our entire satisfaction.

As he is now leaving us in order to join a Steamer as junior Engineer, going to the East, he carries with him our very best wishes, and we can confidently recommend him as a most trustworthy, honourable, intelligent and industrious young man, and feel sure he will give the greatest satisfaction to any one that may require his Services or any place of trust.

LOBNITZ & CO.

My thanks to Michio Amano, historian, of Hakodate, Japan, for this reference. In addition Rio Kitch Kawada [*sic*] attended the Engineering Department of the University of Glasgow (Matriculation no 1826)

in Office and Field Work in Engineering from November 1878 to May 1879, the Certificate states that 'he attended with great regularity, that he behaved with propriety in the class; that he showed great ability ...', GUA.

21. For this type of training see E. W. H. Tennyson D'Eyncourt, *A Shipbuilder's Yarn*, p. 29.
22. See W. D. Wray, *Mitsubishi and the NYK, 1870-1914*, pp. 26 and 487.
23. Taizo Shoda spent seven years in Glasgow. His father (writing 26 March 1919) to 'Mr Brown' (A. R. Brown's son) 'how much I appreciate the value and guardianship and direction' accorded to Taizo (A. R. Brown papers, GUA, UGD 172/5/1/3).
24. Haramiishi subsequently worked for Mitsubishi at Kobe, also served at Shimonoseki and in Tokyo. Obituary, *TNECIES*, vol. 52, 1935, pp. 142-3, J. Clarke, believes there may have been Japanese apprentices (possibly Wadagaki?) and suggests apprenticeships of three or four years at a cost of 450. Personal letter to the author, 16 June 1986.
25. Douglas Vickers noted:

Captain Iwamoto visited these works today with a party, five of his officers and inspectors, and made himself extremely pleasant ... he also told me that the number of men he would want to place in Works is very limited, in fact only ten altogether ... we could no doubt take say four of the men here.

But Vickers adds 'before we decide I should like to have your private opinion in the matter', Vickers Archive, ULC, Vickers Film, Reel no. 307.

26. On 10 March 1912 William Weir wrote to Admiral Fujii at the Admiralty, Tokyo, Japan:

I have to acknowledge receipt of your wire of 16th requesting us to allow Lieutenant Yoshihara to come here as an Apprentice. I have discussed this matter fully last week with Commander Makihara, and arranged that your friend will come here for a certain length of time and then we will give him further experience in other Marine Engineering Works, as you can understand we have a large number of your Countrymen now in the Works, and this is entailing a very large amount of trouble to our Foremen to properly instruct them, as we are anxious that they should learn as much as possible. Accordingly, it is difficult for us to extend this practice, and in addition, the apprentices here do not obtain very much experience as they are kept largely at one particular job. We will accordingly see that your friend has a year of apprenticeship in this country which will be of real value and service to him, and trust that this will be satisfactory (Sir William Weir papers, GUA, D3/5/16), p. 2.

27. See W. J. Reader, *The Weir Group*.
28. Diplomatic Archives, Tokyo; my thanks to Sakae Tsunoyama for this reference.
29. Hume and Moss, *Beardmore*, p. 104.



30. P. Fitzgerald, *Memories of the Sea*, pp. 289–91.
31. See G. Blond, *Admiral Togo*.
32. The *Fuso*, a 3714 ton battle cruiser, with Togo on board, left London in February 1878.
33. S. Pollard and P. L. Robertson, *The British Shipbuilding Industry*, p. 131.
34. J. Russell, *Very Large Ships*.
35. K. C. Barnaby, *The Institution of Naval Architects, 1860–1960*.
36. D. K. Brown, *A Century of Naval Construction*.
37. Copy of draft contract for ‘an Unarmoured Ship of War’, contract, Sir W. G. Armstrong, Mitchell & Company Limited; my thanks to Tyne & Wear Archives Service for the use of these records.
38. J. H. Biles, memo on visit to Japan and China, October 1895, GUA, ASRS, UCSI/21/85.
39. J. D. Scott, *Vickers: A History*; and R. C. Trebilcock, *The Vickers Brothers*.
40. Vickers Archives, ULC, Reel No 307.
41. GUA, William Denny, Contract Envelopes, Ship no 796–797.
42. Dr S. Yokota in correspondence with William Denny’s, Dumbarton, ASRS, GUA, UGD 3/5/0422.
43. Vickers Archive, ULC, Reel no 307, 24 September 1903.
44. One member of the firm wrote:  

I am especially pleased because such a visit will give the Japanese officers a real insight into what Vickers really are and what they can do and . . . I feel certain that if you treat them well all the reports which these fellows make to their masters here and to their people in Japan will have great weight on the Japanese authorities and that your kindness and attention will not be thrown away (Vickers Archive, ULC, Reel No 307, 29 June 1903).
45. See Marder, *Old Friends, New Enemies*, ch. 1, p. 32.
46. Direction for Naval Construction, Cover Number 4, Cover Number 175, Admiralty Collection 138/20, Ships, NMM; my thanks to D. J. Lyon for advice and help.
47. After the Russo-Japanese War naval decisions were increasingly made on political grounds. Marder, *From Dreadnought to Scapa Flow*, vol. I, *The Road to War, 1904–1914*, p. 234.
48. Admiral of the Fleet Sir John Fisher (First Sea Lord from 21 October 1904 to 25 January 1910) apparently objected to the Anglo-Japanese Alliance, ‘the very worst thing England ever did for herself.’ Quoted in Marder, *From Dreadnought to Scapa Flow*, vol. I, *The Road to War*, p. 235.
49. Marder, *From Dreadnought to Scapa Flow*, vol. I, *The Road to War, 1904–1914*, Admiralty Mss, pp. 235–6.
50. The governments of Australia, New Zealand and Canada, disliked the Anglo-Japanese Alliance fearing the threat of the ‘Yellow Peril’, of Japanese arriving as immigrants.
51. Quoted in Marder, *The Road to War, 1904–1914*, p. 238.
52. Marder, *The Road to War, 1904–1914*, p. 239.

## 11 Japanese Life in Britain

1. Most accounts in English of the experience of Japanese in Victorian and Edwardian Britain are guarded and reticent, but for a frank account see Y. Markino, *A Japanese Artist in London*, and *My Recollections and Reflections*.
2. *The Mikado* was given in Yokohama once only (under a different title) and was never performed again in Japan before the Second World War. For the Japanese response to the opera see Y. Kurata, 1952, *Nen London Nihonjin Mura (The Japanese Village in London, 1885)* Tokyo, 1983, pp. 151–7. My thanks to Takeshi Hamashita and Naoki Watanabe for their help.
3. W. S. Gilbert, *Original Plays*, 1928 edition, p. 177.
4. In 1844 parliament had passed a law requiring railway companies to run one train a day, each way, at a cost of 1 penny a mile, to enable working people to travel cheaply.
5. Military bands in Britain were instructed not to play catchy arrangements of *Mikado* tunes in the presence of visiting Japanese dignitaries.
6. Soseki Natsume, distinguished Japanese writer in London between 1900 and 1912, was unhappy; for his time in Pitlochry, Perthshire see M. Inagaki, *Soseki and his Journey in England* (in Japanese) Tokyo, 1987.
7. A. Lloyd, *Everyday Japan*, p. 268.
8. King's College on the Strand was judged by Hammond to be in a less salubrious part of London.
9. Parkes papers, ULC, Correspondence, Hammond to Parkes, 9 December 1866.
10. *Ibid*, 20 August 1867.
11. Barr & Stroud Visitor's Book at Barr & Stroud, Anniesland, Glasgow.
12. F. T. Jane, *The Imperial Japanese Navy*, pp. 284 and 255.
13. Information kindly provided by his granddaughter, Professor Hide Ishiguro, Barnard College, USA.
14. See cover of M. Kita, *Pioneers of Making Japan International*.
15. Sir Edward Holden, *Diary*, Midland Bank Archives, 26/8, 5 March 1909; my thanks to Edwin Green for this information.
16. Midland Bank Archives, ref. Y61/11, York City and County Bank, Ossett Branch, annual report 1904. Mungo was the waste produced in a woollen mill from felted cloth, or from tearing up old clothes. It was used in making cheap cloth.
17. H. Mutsu, 'The Diplomatic and Consular Service of Japan'.
18. See Kurata, 1885, *Nen London Nihonjin Mura (The Japanese Village in London, 1885)*.
19. *The Times*, 10 January 1885.
20. *ILN*, 21 February 1885.
21. *ILN*, 9 May 1885.
22. A. R. Brown Papers, GUA, UGD/172.
23. *Ibid*, UGD/172/1/2.
24. Professor K. Mitsukuri to Professor D'Arcy W. Thompson, FRS, University College, Dundee, correspondence dated 1 August 1896 to 21 February 1901, nos 16230–16241 Special Collections, St AUL.

25. Obituary Dr Motoreru Haramiishi, *TNECSS*, vol. 52, 1935, pp. 142–3.
26. H. J. Edwards, 'Japanese Undergraduates at Cambridge University', *JSL*, vol. VII, 1904–7, 1908, p. 54.
27. H. J. Edwards, p. 54.
28. Private correspondence, copy in GUA.
29. Masataka Taketsuru was very proud of his Glasgow University connections; he studied organic chemistry in 1919. He founded Nikka Whisky company in 1934 and established a malt whisky distillery, stone-built and red-roofed, at Yoichi, Hokkaido.
30. Dr Samuel Cowan (1871–1918) had graduated MB, ChB, from the University of Glasgow in 1903.
31. See 'Love Letters of a Japanese' edited by Marie Stopes, under the pseudonym 'G. N. Mortlake'; M. C. Stopes, *A Journal from Japan*; R. Hall, *Marie Stopes: A Biography*, 1977.
32. Buyata Iwata (BSc, 1893) and Rioto Hunter (BSc, 1893) both lived for some years with Miss Jessie Strickland at 4 Vinicombe Street, Hillhead. In the early 1880s Naomoto Takayama, Kiyoshi Miname as well as Rinzaburo Shida all lived at 18 Markland Terrace, Hillhead (now Oakfield Avenue), with Gavin Whitelaw as landlord. My thanks to Masami Kita who searched the archives for these addresses.
33. Unfortunately no citation for Dr Sakurai has been found in GUA.
34. See *TIESS* for 1902 and *Report and Abstracts of International Engineering Congress*, Glasgow, 1901 (GUL II.q16).
35. The Japanese representatives were Viscount Vice-Admiral Enomoto, Tokio [sic], I. Fujiko, S6 Tiamokubo, Azabo, Tokio, H. Hara, Tokio University, Admiral S. Sasoa, The Admiralty, Tokio. See *Report and Abstracts of International Engineering Congress*, 1901.
36. Yozo Yamao, the first Japanese, as student and apprentice in Glasgow, may have been consigned by Hugh Matheson in London to Colin Brown with whom he lived at 5 West Regent Street, Glasgow.

## 12 Networks, Commercial and Academic

1. If the Japanese had no trustworthy network they were in danger of being deceived by rogues and charlatans. See *The Engineer* (1896–8) no 12, 'the use of the engineering catalogue to deceive' and the 'Bogus Manufacturers' (22 October 1897); no 11, 'Official Trade Commissioners and Flying Business Visitors' (8 October 1897), and no 19, 'The Foreign Advisers to the Japanese' (11 March 1898).
2. To use the middle man in this way was no new thing, see Chapter 2, note 36.
3. See Chapter 10, note 39.
4. There could be problems of bribery and industrial espionage, see Chapter 13 below.
5. See M. M. Matheson, *Memorials of Hugh M. Matheson*, 1889.
6. Glenfield & Company, *Minute Books*, Strathclyde Regional Archives, TD 500.
7. Waterworks whether in Tokyo, Yokohama or elsewhere in Japan,

were undertaken in the 1880s and 1890s partly because of the impact of fever epidemics on increasingly crowded urban areas.

8. Charles Scott Meik (1853–1923); born and educated Edinburgh; employed by T. F. Sharp, a harbour construction engineer; passed the national public surveyor examination. He went to Japan in 1887 and was employed as Harbour Engineer by the Japanese government. Meik prepared two important reports, on *Hokkaido Harbours* (November 1887) and on *Ishikari Navigation* (October 1889); the latter included a note on the transport of coal from Sorachi. Both these reports are held in Sapporo Prefecture Archive. My thanks to Akio Ishizaka. See also C. S. Meik, 'Around the Hokkaido'.
9. The firm were in a close working relationship with Kennedy's Patent Water Meter of Kilmarnock who paid one-third of Mr James's salary and expenses. *Glenfield Minute Book*, 8 December 1892, pp. 300–1, Strathclyde Regional archives, TD 500.
10. Glenfield's arrangements were made with Mitsui & Co. in London on 9 January 1893.
11. Was the inspection 'extremely rigorous and unreasonable'? see *The Engineer*, 'Modern Japan, Industrial and Scientific, no. 2, The Government Inspection of Machinery' (11 December 1896).
12. See W. K. Burton, 'Sanitation in Japan'. Dr John Henry Tudsbury, BSc (1889), DSc (1895) was Chief Assistant Engineer of the Yokohama Waterworks for the Imperial Japanese Government between 1885 and 1888, see Addison, *Roll of Graduates*, p. 617.
13. During the disagreements Mr Meik suggested that Mr Trevithick of the Japanese railways, should be appointed as arbitrator. This suggestion was not taken up. *Glenfield Minute Book*, 4 July 1895.
14. *Glenfield Minute Book*, December 1900, p. 270, gives the principal features of the agreement with Mr Kawakami.
15. John Brown & Company Limited, GUA, UCS1/21/85b (letter 6).
16. See *Kodansha Encyclopedia of Japan*, vol. 6, p. 98.
17. See *The Engineer*, 'Modern Japan', no. 9, 'The Representatives of foreign engineering firms' (17 September 1897) where it is stated that 'Government work . . . is nearly all in the hands of a small clique of wealthy Japanese merchants' (p. 267). See also Anon., *The 100 Year History of Mitsui & Co. Ltd.* (Tokyo, 1977) p. 32.
18. The information on Messrs Takata is scrappy and comes from archives other than those of the company itself.
19. See Chapter 10, note 42.
20. William Denny Contract Envelopes for *Hirafu Maru*, no 796, and *Yamura Maru*, no 797, GUA, ASRS UGD3/5/0422 and UGD3/5/0423 respectively.
21. Alexander Stephen's were sometime associates of William Denny and made the ships' engines.
22. The Imperial government of Japan appointed Honorary Consuls in Liverpool (1 August 1889) and Glasgow (25 May 1889) 'in consequence of the increasing importance of the commercial relations between Japan and Britain'. See *Kakkoku-chuzai-Teikoku-Meiyoryoji-ninmen-kankei-Satsussen* (miscellaneous papers relating to appointments and

- dismissals of honorary consuls in various countries) – Glasgow File, M2-1-0, 14-30, Diplomatic Archives, Tokyo. There was also for a time an Honorary Consul for Japan in Middlesbrough. See H. Matsu, 'The Diplomatic and Consular Service of Japan', *JSL*, vol. VII, 1907, p. 448.
23. A. R. Brown's papers, GUA, UGD 172/5, following Brown's death in 1913, two other members of the firm served as consul. They were A. Scott Younger, BSc, MINA, 1913–35, and Urquhart F. Burrell, 1935–41.
  24. In 1900 the ship-designing side of the firm was strengthened by the recruitment of George McFarlane, a consulting engineer and naval architect. Thereafter the firm was called A. R. Brown, McFarlane. See newspaper clipping obituary C.1908 in A. R. Brown papers, GUA, UGD 172/5.
  25. A. R. Brown, McFarlane Sales Catalogue, C.1912. A. R. Brown papers, GUA, UGD 172/5.
  26. See Ward's *Directory of Darlington . . . Middlesbrough*, Newcastle, 1899, p. 611 and Kelly's *Directory of Middlesbrough*, 1887, p. 31.
  27. James Lord Bowes (1834–99) whose hobby was to collect Japanese art and artefacts. He became known as 'Japanese Bowes'. G. A. Audsley and J. L. Bowes published books illustrating a high quality collection. This was dispersed shortly after his death, being sold at auction by Branch and Lecte of Liverpool in May 1901. The sale raised about £10 000; for further information, B Guinness Orchard, *Liverpool's Legion of Honour*, 1893, privately printed (copy in the University Library, Liverpool); 'An interview with "Japanese Bowes"', *Pall Mall Gazette*, 1889; and Baedeker, *Great Britain for Travellers*. My thanks to Mrs Sylvia Lewis, Honorary Secretary of the Gateacre Society, Liverpool.
  28. *Manchester City News*, 8, IV, 3 January 1920; my thanks to Douglas Farnie for his help.
  29. *The Times*, 30 August 1865.
  30. As Hirubumi Ito said, 'Yes, I was one of Mr Matheson's boys. I owe him a great deal and I shall never forget his home at Hampstead though it is thirty-one years since I saw it', *Westminster Gazette*, 4 March 1895.
  31. Letter from Rinzaburo Shida to Kelvin, 28 July 1880, Kelvin Correspondence, ULC.
  32. J. Harris and W. H. Brock, 'From Giesson to Gower Street: Towards a Biography of Alexander William Williamson (1824–1904)'.  
*The Times*, 30 August 1865.
  34. Harris and Brock, 'Giesson to Gower Street', p. 125. See note 105, Mrs Williamson's Journal, 20 February 1874.
  35. Report of *Fellows Dinner* speech by Dr Sakurai, 3 April 1937, pp. 3–4, UCL Archives.
  36. Notwithstanding Sakurai's testimony, Williamson did not remain a productive scholar. As Harris and Brock have explained:

The session ending with his appointment to the Chair of General Chemistry (1855) was the last in which he published papers upon the

results of investigations by himself, or carried out at his instigation with the notable exception of those carried out by Sakurai in 1880 (J. Harris and W. H. Brock, 'From Giessen to Gower Street', pp. 117 and 125).

37. Herbert-Gustar and Nott, *John Milne*, p. 144.
38. 'William Thomson, Lord Kelvin', *Dictionary of Scottish Business Biography*, pp. 190-2.
39. *Kelvin Centenary Oration and Addresses Commemorative* (Glasgow, 1924) pp. 69-70, GUL 18.a.25.
40. Quoted in S. P. Thompson, *The Life and Work of William Thomson*, p. 18; for Kelvin's patents see pp. 1275-7.
41. James White was closely associated with Kelvin producing many of the latter's patent instruments and developing prototypes. He held an appointment as instrument-maker to the University of Glasgow. In 1900 the firm's name became Kelvin & James White Ltd; see also Stratten's, *Glasgow and its Environs*, pp. 108-9.
42. D. J. Bryden, *Scottish Scientific Instrument Makers 1600-1900*, p. 15.
43. Thompson, *The Life and Work of William Thomson*, p. 19.
44. Alfred Ewing, already employed in Japan, had written privately to Kelvin to advise him of the intended request. Kelvin papers, K2, ULC, from T. Kato, 27 January 1883.
45. The appointment was through Arinori Mori, then Japanese Minister in London. After dealing with the Knott matter Mori continued his correspondence with Kelvin. One letter (22 July 1884) requested Kelvin to receive Baron Dairoki Kikuchi who was about to visit the United Kingdom. Kelvin papers, 11 April 1883 and 22 July 1884, Add 7342, M165 and M166, ULC.
46. Kelvin papers, 28 July 1880, ref. S.126, 8 July 1881, ref. S.127, 10 March 1883, ref. S.128 and 16 May 1883, ref. S.129 ULC.
47. Koizumi, K., 'Japan's First Physicists', p. 78.
48. Kelvin papers, R. Taguchi, President of the Lord Kelvin Association, Utsunomiya Middle School, Japan, 17 November 1906, T1 and T2, Add MS 7342, ULC.
49. Hugh B. Sutherland, 'Rankine, his Life and Times', Rankine Centenary Lecture, the Institution of Civil Engineers.
50. W. J. M. Rankine, *Manual of Applied Mechanics*, [1858], pp. 8-10.
51. See W. J. M. Rankine, *Memoir of John Elder*.
52. In 1878 Dyer had submitted a paper entitled 'The Education of Civil and Mechanical Engineers' to the Institute of Civil Engineers in London. The paper gave the substance of Dyer's experience at the Imperial College of Engineering in Tokyo and by inference praised the achievement there. Dyer also recommended that the money for such education should 'come from the Imperial Exchequer' (p.41). The paper was perhaps an attack indirectly not only on the piecemeal provision of technical education in the UK but also on those in the Institute who were anxious to maintain the pupillage system. The Institute declined to hear Dyer's paper. Subsequently, in 1880, he published it, prefacing the paper with an attack on the Institute which would he hoped be awakened 'to a proper sense of its duty'.

53. Chapter 9, Section 4, note 49.
54. The printed *Testimonials* prepared for Dyer's applications for the Chair of Naval Architecture in 1883 and 1886 are in the Court Minutes, 21 September 1886, GUA.
55. See *Testimonials*, pp. 31–2; extract from *Glasgow Herald*, 15 May 1886.
56. See A. R. Buchan (ed.) *A Goodly Heritage: A Hundred Years of Civil Engineering at Strathclyde University, 1887–1987* (Glasgow, 1987).
57. From Professor Sakuro Tanabe, 'a distinguished graduate of Kobu-dai-Gakko', Dyer and his family received many kindnesses. Tanabe was in Glasgow in August 1904 talking to Dyer about editing 'The History of Industry in the Meiji Era'. Professor Tanabe also wrote the obituary in October 1918 for the *Osaka Mainichi News*. Fragments of Tanabe Correspondence, University of Tokyo Archives.
58. Japanese students continued to take the preliminary entrance paper in Japanese in subsequent years. Those taking this option included Konji Satow (1902); Edward Hunter (1905); Shigeya Kondo (1905) and Taizo Shoda (1912). This list is not comprehensive, material from GUA.
59. Dyer, *Evolution of Industry*, p. 182.
60. There is no reason to doubt that it would be possible to build up a fuller picture of the Japanese connections in other 'skill centres'. For example, at Newcastle upon Tyne where there were:  
  
immense stores of bituminous coal, as well as Armstrong Whitworth & Co, Swan Hunter, Wigham Richardson & Co. The turbine manufacturing enterprise of Charles Parsons was situated adjacent to the Newcastle upon Tyne Electric Supply Company's (NESCO) Carville A power station. Blast furnaces, engineering works, chemical plants and brick and tile works all added to the industrial activity of the region (T. P. Hughes, *Networks of Power*, p. 454).
61. Sir Henry Enfield Roscoe (1833–1915); see chapter 9, note 64.
62. See Chapter 14, note 33.

### 13 Licencers and Licensees

1. See Ian E. Inkster, 'Meiji Economic Development in Perspective'; Inkster, *Japan as a Development Model?*; and Inkster, *Science Technology and Late Development Effect*.
2. H. J. Jones, *Live Machines*, pp. 12–14.
3. See Chapter 2, Section 5.
4. Ito, in 1872, in Glasgow, requested Rankine to supply 'a key person to give assistance to Japan to build a steel works where weapons could be manufactured'. Rankine explained 'that what Japan needs are iron ore exploitation specialists, steelwork experts and processors and that an independent nation should have an institute which would train these men'. The Imperial College of Engineering resulted. See S. Fujita, *Gojuikunen mae no Kobu Daigaku ni tsuite no Kioku (Recollections of the Institute of Technology some Fifty Years Ago)*.

5. D. Dougan, *The History of North-East Shipbuilding*; P. McKenzie, W. G. Armstrong: *The Life and Times of Sir William George Armstrong, Baron Armstrong of Cragston*; R. C. Trebilcock, *The Vickers Brothers: Armaments and Enterprise, 1854–1914*; J. D. Scott, *Vickers: A History*.
6. The material used here comes from 'Memorandum on Japanese Business', 5 June 1909 (Tyne & Wear Archives Service ref. 31/7772) and 'Report on the condition of the KKN *Seikosho*' (TWAS, ref. 31/7806). Other Armstrong references come from the Armstrong Minute books (AMB); my thanks to Richard Potts for his help.
7. The *Meiji* government invested heavily in Hokkaido, partly to give resettlement opportunities to displaced *samurai* and partly to forestall the Russians.
8. I. L. Bird, *Unbeaten Tracks in Japan*, Letter XXXV, p. 221.
9. The works were laid out as far as possible on level ground, although the hills encroached. Smithy, hammer shop, power shop, steel-smelting furnaces and a press house were all planned.
10. W. G. Armstrong became Sir W. G. Armstrong and then Sir W. G. Armstrong, Mitchell & Co. Ltd (1883); later, in 1897, with the takeover of the Manchester engineering firm of Sir James Whitworth, the firm became known as Armstrong, Whitworth & Co. Ltd.
11. Vickers, Sons & Co. Ltd, became Vickers Sons & Maxim Ltd (1897) and Vickers Ltd (1911); Vickers & Armstrongs amalgamated in 1927.
12. AMB, 8 October 1908 (ref. 130/1267). Report on the condition of the KKN *Seikosho*, ref. 31/7806.
13. By October 1908, when Lord Rendel was himself about to depart for Japan, the Directors of Armstrong's asked 'that Mr John Noble be requested to prepare a return showing the nature and extent of our financial arrangements in Japan', TWAS, ref. 31/7806.
14. The British were critical of the naval arsenal at Kure.
15. Report, F. B. Trevelyan, Report on KKN *Seikosho*, TWAS, ref. 31/7806, n.d.
16. My thanks to Yukiko Fukasaku for the use of her paper 'Technology Imports and R&D at Mitsubishi Nagasaki Shipyard in the pre-war Period', presented to the European Association of Japanese Studies, Paris, September 1986, p. 17. The firm of 'Nesdrum and Co.', boiler-makers, has not been traced.
17. W. J. Reader, *The Weir Group: A Centenary History*. Some of the Weir papers, including Sir William Weir's letter books, are held in GUA.
18. Kawasaki was a major manufacturer of ships and machinery. It was originally Kawasaki Tsukiji Shipyard (1878); the Kawasaki Hyogo Shipyard was opened in Kobe in 1886. The two firms merged in 1896.
19. It was James Weir who first became involved in heating feed-water for the ship's boiler Reader, (*The Weir Group*, pp. 4–5). James George Weir (born 1886) studied in Germany working at Nord Deutsche Maschinen and Armaturen Fabrik, Bremen, and later at Freiburg Academy (Reader, *The Weir Group*, p. 27).
20. See Reader, *The Weir Group*, p. 8.



21. William Douglas Weir (1877–1959), First Viscount Weir of Eastwood. The papers of Lord Weir of Eastwood, post-1918, are held at Churchill College, Cambridge.
22. E. C. Smith, *A Short History of Naval and Marine Engineering*, p. 220.
23. Reader, *The Weir Group*, p. 33.
24. Ibid, pp. 34–5.
25. W. Weir to Noltenius 27 December 1911, GUA, DC/96/1/7; Noltenius worked for Nord Deutsche Maschinen und Armaturen Fabrik, Bremen.
26. W. Weir to G. D. Irving, 17 January 1912, GUA, DC/96/1/7.
27. W. Weir to J. R. Richmond, 19 February 1907, GUA, DC/96/1/7.
28. W. Weir to Captain Fujii, 18 December 1907, GUA, DC/96/1/7.
29. W. Weir to G. D. Irving, 17 January 1912, GUA, DC/96/1/7.
30. See R. Appleyard, *Charles Parsons: His Life and Work*.
31. For the *Turbinia's* triumph see Chapter 10, Note 13.
32. Some of the archives of Parsons Marine Steam Turbine Co. Ltd. (now NEI Parsons) are now held at TWAS, Blandford House, Newcastle upon Tyne.
33. Parson's marine steam turbines fitted to ships for Japanese owners, 1906–1918.

Design No.	Shipbuilder or agent	Ship Type/Name etc.	Date
9	Mitsubishi Co.		n.d. (1905)
22	Mitsubishi Co. Brown McFarlane }	<i>Ten-yo Maru</i> and <i>Chi-yo Maru</i>	1906
43	Mitsubishi Brown McFarlane }	Japanese torpedo boat destroyers, <i>Umikase</i> , <i>Yamakase</i>	1908
105	Brown McFarlane for Mitsubishi	Messrs Toyo Kiseu Kaishka's S. American liner <i>Auyo Maru</i>	1911
130	Cdr. Toshida and Mitsubishi }	Japanese battleship <i>Huza</i>	1913
135	Mitsubishi per Mr Esaky }	NYK Steamers No 242 <i>Toysaka Maru</i> No 243 <i>Toyama Maru</i>	1913
18	Mitsubishi yard	Volunteer steamer 194 <i>Sakura Maru</i>	1906
21	Brown McFarlane for Mitsubishi	Model for Imperial Japanese Naval Academy at Etajima	1908
23	Denny & Co.	'Japanese ( <i>Hirafis Maru</i> <i>Jamura Maru</i> pencilled)	1907
25	Mitsubishi	Volunteer steamer for the Imperial Marine Association ( <i>Umsyaka Maru</i> pencilled)	1908
26	Mitsubishi	<i>Shinyo Maru</i>	1908
34	Mitsubishi	Japanese cruiser 2nd class <i>Yahagi</i>	1909
47	Mitsubishi	'Combination' NYK European liner <i>Katori Maru</i>	1911
79	Mitsubishi	550 ton light cruiser no 291 (? <i>Tanca</i> pencilled)	1917
80	Mitsubishi	<i>Sawakaze</i> , <i>Minekaze</i> , <i>Hakaze</i>	1917

(continued)

Design No.	Shipbuilder or agent	Ship Type/Name etc.	Date
81	Mitsubishi	2nd class torpedo boat destroyers <i>Kaki</i> and <i>Toza</i>	1918
Engine 43	Mitsubishi	Japanese despatch vessel <i>Mogami</i>	1906
Engines 44 & 45	Mitsubishi	TSS <i>Tenyo Maru</i> and <i>Chinyo Maru</i>	1906

Source: TWAS, Parsons Marine Steam Turbine Co. Ltd, 1361/7, 1361/8 and 1361/9; my especial thanks to Richard Potts for extracting this material.

34. Two of the turbines were intended for Mitsubishi at the Takashima Colliery, one was for Mitsubishi at Namadzuta Colliery (both on Kyushu Island), another for Mitsubishi's own powerhouse, one was for Shinnen Colliery and one for Sado Mine, one for Lamazata Colliery, one for Futasi Colliery of the Imperial Steel Works, Kyushu. Finally, one was for Nikkan Gas Kabushiki Kaisha, Maho, Korea.
35. The amount of royalty payable on each dynamo seems to have varied between £12 10s and £25. No other detail of the licensing arrangements has been found.
36. Reader, *The Weir Group*, p. 25.
37. W. Weir, *Letter Books*, GUA, W. Weir to J. Latta, 26 February 1907.
38. Vickers Film, R.307, UCL, Letter from Admiral Yamanouchi, Japanese Steel Works Ltd, 5 July 1911.
39. Vickers Film, R.307, UCL, 11 July 1903.
40. *The Times*, 17 February, 17 April, 5 & 7 May and 20 July 1914.
41. Barr & Stroud papers, Barr to Harold Jackson, 9 May 1907; my thanks to Iain Russell.

## 14 Exhibitions, Designers and Architects

1. See C. Yamada (ed.) *Japonisme in Art*.
2. See B. H. Chamberlain and W. B. Mason, *A Handbook for Travellers in Japan*, gave advice on the 'purchase and shipment of goods' and listed a wide range of 'curio dealers' in various Japanese towns.
3. Japanning was originally the art of lacquering as practised in Japan and China, the lacquer being made from the sap of *rhus vernicifera*. But in the West Japanning meant varnishing metal objects followed by heating or stoving; bastardised Japanese designs were used usually on a black background.
4. R. West, *The Fountain Overflows*, Virago Edition, 1983, p. 173.
5. Mortimer Menpes (1855–1938) an Australian who settled in London, published in 1901, in A. and C. Black's Beautiful Books Series, *Japan: A Record in Colour* with 100 of his original coloured plates; see also C. Inman, 'A and C Black's 20/- Series', *Antiquarian Book Monthly Review*, October 1987, pp. 372–8.

6. See 'Mr Mortimer Menpes House, 25 Cadogan Gardens', *The Studio*, vol. 17, 1899, pp. 170–8. The house is now the north-west corner of the premises of Messrs Peter Jones, Department Store, Sloane Square, London.
7. See W. Buchanan, 'Japanese Influences on the Glasgow Boys and Charles Rennie Mackintosh', C. Yamada (ed.) *Japonisme in Art*, pp. 291–301, and W. Buchanan, *Mr Henry and Mr Hornel Visit Japan*.
8. R. Spencer, 'Whistler and Japan: Work in Progress' in C. Yamada (ed.) *Japonisme in Art*, pp. 57–81; note also D. Harbron, *The Conscientious Stone*. Godwin's widow Beatrice married Whistler in 1888. Godwin was one of the earliest collectors of Japanese art.
9. M. Menpes, *Whistler as I Knew Him*.
10. Kawanabe Kyosai (1831–89); see W. Anderson, 'A Japanese artist, Kawanabe Kyosai', *The Studio*, vol. XV, 1898, pp. 29–38. M. Menpes, 'A personal view of Japanese Art', and M. Menpes, *Japan*, ch. III.
11. See obituary of Dr Josiah Conder (1852–1920) *Japan Times and Mail*, 23 June 1920 (a copy in Meiji Shimbun, Zaishi Bunko, University of Tokyo).
12. See C. Dresser, *Japan, its Architecture, Art and Art Manufacture*, and W. Halen, 'Christopher Dresser and the Cult of Japan', a lecture for the Society for the Studies of Japonisme, Tokyo, 4 December 1983.
13. In the Shuhogahara Foreign Cemetery in Kobe there are the graves of Christopher Dresser (born 3 July 1857, died 20 November 1903) and Charles Dresser (born 1881, died 1932). These, it is assumed, would be Dresser's son (and grandson?) who settled in Kobe; my thanks to C. C. Duncan of Lipton, Japan KK Kobe.
14. M. Menpes, 'A Letter from Japan', *The Studio*, vol. XI, 1897, pp. 32–6 and vol. XII, 1898, pp. 21–6.
15. D. Bennett, *King without a Crown*, pp. 198–211; C. H. Gibbs-Smith, *The Great Exhibition of 1851*, and E. Bonython, *King Cole*.
16. Gibbs-Smith, *The Great Exhibition*, p. 7.
17. Y. Fukuzawa, *Seiyo Jiyo (Conditions in the West)*, *Collected Works*, Tokyo, 1985, p. 312.
18. In Japan, Charles Wirgman the correspondent of the *ILN*, reported on local Japanese exhibitions, *Hakurankai*, *ILN*, 19 October 1872.
19. Bonython, *King Cole*, p. 7.
20. Kido, *Diaries*, vol. II, p. 322.
21. See R. Alcock, *Art and Art Industries in Japan*, p. 291.
22. My thanks to Peter Kornicki for the use of his material.
23. Part of the Japanese Collection held at the Glasgow Museums and Art Galleries was an exchange for engineering exhibits to be exhibited in Tokyo, organised by R. H. Smith in the 1870s when he was Professor of Engineering at Tokyo.
24. G. A. Audsley and J. L. Bowes, *Ceramic Art of Japan*. (This copy in St.AUL NK 4167.A8B7, 2 vols.) See also Chapter 12, note 27, and R. L. Wilson, 'Tea Taste in the Era of Japonisme: A Debate'.
25. P. Fitzgerald, *Memories*, p. 116.
26. In 1901 in the Japanese pavilion there were 5000 square feet of display,

- see *Catalogue and Guide, Glasgow International Exhibition*, Glasgow, 1901.
27. Christopher Dresser's role as designer is described in J. Heskett, *Industrial Design*, Oxford, 1980, pp. 9–10, 24–6.
  28. See Halen, 'Christopher Dresser and the Cult of Japan', a lecture for the Society of the Studies of Japonisme, Tokyo, 4 December 1983. The author is grateful for his help.
  29. John C. Robinson, *Catalogue of the Museum of Manufactures*, 1856, p. 92.
  30. National Archives, Tokyo, Official Records of the Ministry of the Interior (free translation), January (*Meiji* 10), 1877.
  31. Dresser's itinerary was as follows: visited: the Shiba Mausoleum of the Tokugawa family (29 December); Toshu-gu at Ueno (6 January); Confucian temple in Tokyo (16 January); Daibatsu, Kamakura; theatre in Tokyo (18 January); the Kofuku-ji, Todai-ji, Great Buddha Hall, Shosoin (the treasures) and the Grand Kasaja Shrine in Nara and pagoda in Osaka (3 February); Ki Mii-dera Temple (15 February); the Koya-san region; several temples in the Kyoto environs (18 February); Ise Shrine, Nagoya Castle and temples in and near Nagoya (7 March); the Shiba mausoleum of the Tokugawas (return visit) (25 March); the region of the Toshu-gu at Nikko (30 March); sailed from Yokohama (3 April). Diary of the Interior Department (*Meiji* 10), 1877, p. 2764, quoted in Halen, 'Christopher Dresser and the Cult of Japan'.
  32. Halen, 'Christopher Dresser and the Cult of Japan', p. 17.
  33. *Ibid*, p. 21.
  34. He started designing for Linthorpe Art Pottery and James Couper and Sons, makers of Clutha Glass, as well as designing items for Wedgwood and Mintons. For one year in 1880 he was Art Editor for *Furniture Gazette* and for the Art Furnishers Alliance he became Art Manager. At the same time he ran his own design studio and lectured widely, particularly in London and Glasgow; Dresser, *Japan*, p. 353.
  35. Halen, 'Christopher Dresser and the Cult of Japan', p. 24.
  36. Dresser, *Japan*, preface, p. V.
  37. *Architectural Japan: Old, New*, Tokyo, 1936, and 'The search for "Japanese architecture" in Modern Ages', *The Japan Foundation Newsletter*, vol. XV, no 3, December 1987, pp. 1–9.
  38. De Boinville, who arrived in Glasgow after the Franco-Prussian war in 1871, was recruited from Glasgow for service in Japan. Charles Alfred Chastel de Boinville (1850–97) obituary, *Journal Royal Institute British Architects*, vol. IV, 3rd Series, 1897, pp. 359–60.
  39. 'The History of Shimizugumi', *Architectural Japan* pp. 221–2.
  40. See Chapter 6, Section 2, and K. Abe, 'Early Western Architecture in Japan'.
  41. C. T. Marshall, *Letters from Meiji Japan*, p. 75.
  42. C. Whitney, *Clara's Diary*, p. 255.
  43. In Osaka he was responsible for the design and construction of the Royal Mint. See Chapter 2, Section 5.
  44. E. Seidensticker, *Low City, High City*, pp. 59–60.

45. Hansell was responsible for the following buildings, almost all of which were commissioned by Westerners: Bishop Poole's School, Osaka (for girls) (1888-9); Bishop Poole's School, Osaka (for boys) (1890) both for the Christian Missionary Society; 'Harris School of Science' for the Doshisha College at Kyoto, to accommodate 300 chemistry students, with laboratories (1889-90); exclusive premises for the Kobe Club House, Kobe (1892); Hong Kong and Shanghai Bank, Kobe; enlargement of the Oriental Hotel, No. 80 Kobe; works on godowns and other commercial premises for the principal firms of Kobe (1892); Chartered Bank of India, Australia and China, Kobe (1912); Kobe International Hospital, Kobe (1916). Alexander Nelson Hansell (1856-1940), biographical details and transcription of A.N. Hansell's Fellowship Statement, 1890, from the Librarian, the Royal Institute of British Architects, Portland Place, London, to whom my thanks are due.
46. See Chapter 6, section 4.
47. William Burges (1827-81); best-known work was the restoration of Cardiff Castle for the Marquis of Bute. See Robert Furneaux Jordan, *Victorian Architecture*, 1966, p. 100.
48. See H. Dyer, *Report on Imperial College of Engineering 1873-1877*, Tokyo, 1877, Conder's report on the teaching of Architecture, pp. 64-5.
49. See P. Barr, *The Deer Cry Pavilion*, pp. 179-80.
50. Seidensticker, *Low City, High City*, pp. 69-70.
51. See J. Conder, *A Few Remarks on Architecture*, pamphlet to be found at the Institute of Architecture, Minato-Ku, Tokyo.
52. Dr Tatsuno Kingo (1854-1919) an early student of Conder's at ICE, was responsible for the original Bank of Japan building in Tokyo which is still in use. Kingo was also responsible for the Bank of Japan building in Kyoto (1903), Tokyo Station (1914) and Osaka City Public Hall. See also S. Sakamoto, 'Railway Station architecture', *Architectural Japan*, pp. 81-9.
53. Obituary, J. Conder, *Japan Times and Mail*, 23 June 1920.
54. See Chapter 6, note 58; his grave was tended and his memory kept alive by the artist, Kusumi Kawanabe.
55. *Memorial Albums* can be seen at The Architectural Institute of Japan (Shiba 5-26-20, Minato-Ku, Tokyo, Japan 108).
56. See *West Meets East*, the Japanese introduction to Western Architecture in nineteenth century and twentieth century, vol. 2.
57. Of the buildings which were designed and built directly under Conder's own eye, the following remain and can still be seen today in Tokyo: the Iwasaki house (Yushima 4-6, Bunkyo-Ku); another Iwasaki house and garage (both at Takanawa, 4-25-33 Minato-Ku and the Iwasaki tomb (Okamoto 2-23, Setagaya-Ku). There is also a Furukawa house (Nishigakana 1-27-29 Kita-Ku); the Mitsui Club (Mita 2-3-7 Minato-Ku) and Shimazu House, now the administrative building of Seisen Women's College, (Higashi-Gotanda 3-16-21, Shinagawa-Ku). The only large-scale public building which remains – not designed by Conder but built under his supervision – is the Greek Orthodox Church at Kanda (Surogodai 4-1-3 Chiyoda-Ku, Tokyo).

58. J. Conder, ICE, class reports of the professors, 1873–7, Tokei, pp. 64–5; see also J. Conder's articles in the *Japan Gazette*, 2, 10, 13 and 15 March, 1877.
59. Dresser, *Japan*, preface, 1882.

## 15 A Copartnery: On Japanese Terms?

1. For a simple contemporary Western account of the Emperor Mutsu Hito (Gentle Pity) see J. H. Longford, *The Evolution of New Japan*, ch. X, pp. 142–57.
2. Although German interests in Japan were powerful, the German Emperor's attempts to organise the European powers against the 'yellow peril' made an alliance in that quarter less likely. See I. Nash, *The Anglo-Japanese Alliance*, pp. 285, 309, 377.
3. Navies were equipped with Barr & Stroud Rangefinders to focus the guns to the correct range. The Japanese crews had practised with the equipment for months. There is a story – perhaps apocryphal – that Admiral Togo in after years assured the people at Barr & Stroud in Glasgow that their rangefinders had won the Battle of the Japan Sea for him. Seppings Wright commented 'By this great victory the Japan Sea becomes the moat of Tokyo' (Seppings Wright, *With Togo*, p. 273).
4. The term feudalism is used for convenience although Japanese feudalism, *hoken sei*, was markedly different from any kind of feudalism in Europe.
5. As Dyer remarked, 'the highest ambition of all the officials with whom I came into contact, and also of my own students, was that their country might become the Britain of the East', and he added 'and they not infrequently got laughed at by foreigners for what was considered their conceit', H. Dyer, *Dai Nippon*, p. 342.
6. Masahaga Yazu's *Universal Regional Geography for Middle Schools*, quoted in C. A. Fisher, 'Britain of the East', p. 344.
7. G. N. Curzon, *Problems of the Far East*, pp. 395–6.
8. G. S. Graham, *The politics of naval supremacy*, p. 125.
9. S. G. Checkland, *The Elgins*.
10. Fitzgerald, *Memories*, p. 113.
11. Translation of a letter, written by an unknown Japanese, transcribed by J. M. Whistler, BP.1136/45 8pp Whistler Collection, GUL, quoted by kind permission.
12. *Iwakurako Jikki* (A true record of Prince Iwakura) (Tokyo, 1927) quoted in H. D. Harootunian, 'The Progress of Japan and the Samurai Class', p. 258.
13. See S. D. Brown and A. Hirota, 'Okubo Toshimichi, his Political and Economic Policies in early Meiji Japan'; M. Iwata, *Okubo Toshimichi*; and S. D. Brown and A. Hirota, *The Diary of Kido Takayoshi*.
14. B. S. Silberman and H. D. Harootunian, *Modern Japanese Leadership*, p. 412.
15. B. S. Silberman, *Ministers of Modernisation*, p. 73.
16. E. I. Sugimoto, *A Daughter of the Samurai*, p. 5.

17. A. J. Toynbee, *A Study of History* (abridged by D. C. Somervell), Oxford, 1946, pp. 372–3.
18. Y. Fukuzawa, 'On de-Asianisation' in *Modern Japan through Contemporary Sources*, vol. III, 1869–94, Tokyo, 1972, p. 129.
19. W. T. Stead (ed.) *Review of Reviews*, vol. IX, January to June 1894, p. 271.
20. E. Pauer, 'Japan's Industrial Apprenticeship', pp. 1184–200; Pauer, *Japans Industrielle Lehrzeit*.
21. E. Pauer, 'Japan's Industrial Apprenticeship', p. 1186.
22. The plans for the reverberatory furnace complexes built in Saga (after 1850) and Kagoshima (1857) can be reconstructed. At Nirayama (c. 1856) near Shimoda, the layout was planned as on a Western model. At Miyako, but only in the planning stage, the Japanese succeeded in putting the various production processes into a line of continuous manufacture.
23. For a facsimile of the title page see Pauer, *Japans Industrielle Lehrzeit*, p. 19.
24. T. Terakawa and W. H. Brock, 'The Introduction of Heurism into Japan'.
25. Takato Oshima was involved with the reverberatory furnace movement before the Restoration, see S. Oshima, *Oshima Takato gyojitsu*; for his itinerary in Britain as a member of the Iwakura Mission see Chapter 7, section 3 and note 29 above.
26. I. Ken'ichi, 'The Early Steel Industry, successes and failures', *Entrepreneurship, the Japanese Experience*, no 3, Tokyo, June 1982, pp. 7–16, T. Nakaoka, 'On Technological Leaps of Japan'.
27. At the end of the 1880s Japan was importing some 80 per cent of the annual demand for iron and steel, for rails and locomotives, factory machinery and ships; see Chapter 2, Section 3 above.
28. Although Kamaishi has remained a steel city, the wheel has come full circle, as Nippon Steel contracts its operation at Kamaishi to cut company losses. See 'Sunset in the East', *The Observer Magazine*, 2 August 1987, pp. 23–7.
29. From our Special Commissioner, 'The training of Engineers, Modern Japan – Industrial and Scientific', XIII, *The Engineer*, 3 & 10 December 1897, pp. 567–9. For a list of these articles see Chapter 3, note 62.
30. K. Koizumi, 'Japan's First Physicists', p. 87. The original letter is in the Tanakadate Papers, National Science Museum, Tokyo, Japan.
31. B. M. Allen, *Sir Ernest Satow*, p. 38.
32. R. Minami, 'Mechanical Power in the Industrialisation of Japan', p. 935; see also A. Gerschenkron, *Economic backwardness in historical perspective*, ch. 1, p. 27.
33. *Sunday Times*, 21 February 1988, and C. G. Ryan, *The Marketing of Technology*.
34. *The Daily Telegraph*, 1 November 1858, see also *The Times*, 10 November 1858.
35. P. J. Cain and A. G. Hopkins, 'Gentlemanly Capitalism and British Expansion Overseas II: New Imperialism, 1850–1945', *EcHR*, 2nd series, 1986, vol. XL, no 1, pp. 1–26.

36. Between 1896 and 1899 of the 131 million *yen* spent abroad 111 million *yen* was spent on warships. See H. Saito, 'The Formation of Japanese Specie Abroad', Chiba University of Commerce, 1988.
37. See D. J. Lyon, 'The Thornycroft List'; my thanks to David Lyon, curator, Naval Ordnance, Department of Ships and Antiquities, NMM. See also K. C. Barnaby, *100 Years of Specialised Engineering and Shipbuilding*.
38. S. Terano and M. Yukawa, 'The Development of Merchant Shipbuilding in Japan', *TINA*, 1911 (Jubilee Volume), p. 146 (contribution to discussion by Dr S. J. P. Thearle).
39. The *Zosen Kio Kai*, or Society of Naval Architects in Japan was founded in 1897; see F. P. Purvis, 'Japanese Ships', p. 81.
40. *TINA*, 1911 (Jubilee Volume) Rear Admiral Kondo, pp. 50–60; Dr S. Terano, pp. 133–48; Dr S. Terano and Professor Baron Shiba, pp. 184–92, and Engineer Rear-Admiral T. Fujii, pp. 193–200.
41. For details of Admiral Miyabara's boilers and the tests used on them see *TINA*, 1911 (Jubilee Volume) p. 195. J. M. Allan (of Hawthorn Leslie on the Tyne) commented 'We have all heard of the boiler that was invented by Admiral Miyabara; he was a very old friend of ours and I am very pleased to know that the boiler he designed has given such satisfactory results' (p. 200).
42. *TINA*, 1911 (Jubilee Volume) A. E. Seaton, p. 199.
43. Inaugural Address of the President of the Institute of Bankers, *Journal of the Institute of Bankers*, December 1905, pp. 535–6; my thanks to Edwin Green.
44. Allen, *Sir Ernest Satow*, p. 110.
45. From material shown at Yokohama Archives of History, in the autumn of 1984, as part of exhibition on Jardine, Matheson in Japan; my especial thanks to Hisako Ito.
46. R. H. Bruce Lockhart, *My Scottish Youth*, p. 348.
47. See M. B. Jansen, 'Monarchy and Modernisation in Japan'; and J. W. Hall, 'A Monarch for Modern Japan'.
48. S. Tsunoyama, 'Watching the Clock'.
49. See O. Saito, *Purota-kogyoka no jidai: Sei-o to Nihon no hikakushi* (*The Age of Proto-industrialisation: Western Europe and Japan in Comparative and Historical Perspective*) (Tokyo, 1985) and 'Changing Structure of Urban Employment and its Effects on Migration Patterns in Eighteenth- and Nineteenth-century Japan', March 1986, Institute of Economic Research, Hitotsubashi University, Tokyo.
50. M. Matsukata, *Report on the Adoption of the Gold Standard in Japan*, p. XIV.
51. J. H. Gubbins, *The Progress of Japan, 1853–1871*, p. 224.
52. See J. E. Hoare, 'Japan undermines Extraterritoriality . . . 1885–1899' in I. Nish and C. Dunn (eds) *European Studies in Japan*, pp. 125–9.



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