

Mukden Medical College (1911–1949): an outpost of Edinburgh medicine in northeast China.

Part 2: 1918–1949: expansion, occupation, liberation and merger

DS Crawford

Emeritus Librarian, McGill University, Montréal, Québec, Canada; Honorary Research Librarian, China Medical University, Shenyang, China

ABSTRACT Scottish physician Dugald Christie commenced practice in the city of Mukden (Shenyang) in Manchuria in 1883. In 1911, he founded the Mukden Medical College, the first Western medical school in Manchuria. Edinburgh-trained physicians and surgeons largely staffed the college and in 1934 it became the first foreign university to have its medical degree recognised by the University of Edinburgh. It was merged into the China Medical University (Zhongguo yi ke da xue) in 1949. During its separate existence the Mukden Medical College brought modern medicine and medical education to northeastern China, and its legacy continues to influence both medical practice and medical education in China.

KEYWORDS China Medical University, Chinese history, Dugald Christie, medical education, missions and missionaries, Mukden Medical College, University of Edinburgh

LIST OF ABBREVIATIONS China Medical Board (CMB), China Medical Missionary Association (CMMA), Mukden Medical College (MMC), Peking Union Medical College (PUMC), Royal College of Physicians of Edinburgh (RCPE), Royal College of Surgeons of Edinburgh (RCSEd), South Manchuria Medical College (SMCC), United Nations Relief and Rehabilitation Administration (UNRRA)

DECLARATION OF INTERESTS No conflict of interests declared.

INTRODUCTION

As has been noted,¹ the MMC, founded by Edinburgh-trained physician Dugald Christie, accepted its first students in January 1912. Despite the confused political situation in China following the overthrow of the Qing dynasty in 1911, and the outbreak of the World War in 1914, which resulted in some foreign staff volunteering for war duty, the College prospered. Classes were admitted every two years and, after a five-year programme, twenty members of the first class graduated in 1917.

The end of the World War saw Soren Ellerbek's full-time appointment to the MMC being approved by the Danish Lutheran Mission, and two MMC graduates, and now members of staff, (Leo Tung-lun and Gow Wenhan) were sent to Edinburgh for postgraduate training. Also, from 1919 onwards, the Mukden Hospital (which then had 140 beds and 24 nurses under a British matron) and the College were, in essence, merged: staff worked in both places and students did most of their practical work in the wards.² In 1920, as there were still major problems in recruiting, and paying, foreign staff,

the Council on Medical Education of the CMMA recommended the further consolidation of western medical schools in China and wondered 'whether some measure of co-operation between the Union Medical College, Mukden, and the School of Medicine, Tsinan, could not be satisfactorily arranged',³ but there appears to have been no follow-up on this suggestion. By 1921, the teaching staff numbered fourteen; there were three Chinese assistants in training, two anatomy demonstrators, and a science graduate teaching physics. In 1926, Ellerbek⁴ reports ten full-time foreign teachers and six Chinese teachers, 'four of whom [have] received post-graduate training in Great Britain.'

Three women-only medical colleges had been established in China by 1917; the medical school at Changsha and the PUMC had started to accept female students in 1921; and formal discussions on this subject began at the MMC in June of that year. In November 1921, the College Board of the MMC agreed unanimously that 'this College should admit women students in 1924'.⁵ The cost of hiring a matron and appointing a female Chinese doctor, of funding the opening, staffing and operation of a women's hostel for twenty students, and

Correspondence to DS Crawford,
135 George Street South, Suite 304
Toronto, Ontario
Canada M5A 4E8

tel. +1 (416) 504 7636

e-mail david.crawford@mcgill.ca

the extensions to the College and the hospital that would make this expansion possible amounted to about £8,000. Fortunately, the MMC had recently received a gift of £10,000 (in memory of his two sons who had been killed in the war) from Lord Maclay (Joseph P Maclay), a Glasgow entrepreneur, politician and philanthropist. The only condition of this donation was that the College should accept women students as soon as possible; four were admitted in 1924.

On 28 March 1922, the tenth anniversary of the MMC's opening, the third class graduated. Shortly afterwards, in May, Christie retired to Edinburgh, Ellerbek succeeding him as Principal. In 1922, to allow more students to be admitted and to help solve the shortage of doctors, it was decided to admit a new class every year, instead of every second year, but the class size was limited to twenty, to allow for enough clinical experience. In 1926, new regulations promulgated by the government made it desirable to appoint a Chinese Vice-Principal; with their Edinburgh training complete and both recently returned from another postgraduate training visit to Europe, Gow was appointed to this post and Leo appointed as superintendent of the hospital. The Mukden Medical College was well regarded, and in 1926, Ellerbek reports that there were usually between fifty and seventy applications for the twenty available places. However, by 1928, it was clear that resources had not increased enough to admit a class every year and then teach them adequately. There was a choice: return to admitting new classes every second year, or raising more money. The Mukden Medical College Senatus agreed that the need was so great that the only possible course was to provide new buildings, more equipment and additional staff. They estimated the cost to be £22,000. This suggestion worried the Mission Board in Edinburgh, which said: 'While not holding themselves responsible for the financial support of the College, the Foreign Mission Committee regard it as a valuable part of their work and feel themselves to a large degree responsible for its continuance and welfare.'² In 1929, the MMC had twelve foreign and seventeen Chinese staff and a total of 95 students – the largest number in any mission medical school reported by Shields.⁵ (He reported that the PUMC had 93 regular students and a further 194 'special and graduate students' while the SMMC had 638.)

The Mukden Medical College not only trained doctors. As there was clearly a need for qualified staff to work in the Mukden Hospital and to assist in other hospitals in Manchuria, it took a leading role in training allied health professionals.¹⁴ In 1914, a pharmacy school was created and almost eighty pharmacists graduated from then until 1950. In 1917, the MMC began to train laboratory technicians. It produced forty graduates from 1917 to 1944. (It was a three-year programme up to 1937, when it increased to four.) The first regular school of nursing

in China was opened in Beijing in 1905–06. A nursing school was established by the MMC in 1923; its four-year programme trained over 300 nurses and midwives from 1923 to 1950.

MANCHUKUO AND JAPANESE RULE

Again the events in the wider world impacted on the MMC. The Japanese assassinated the Chinese ruler of Manchuria, Marshal Chang Tso-lin, on 4 June 1928 and the political situation in Manchuria worsened. The stock market crash of 1929 reduced funding possibilities and, despite fund-raising efforts led by Christie in Scotland, resources were still inadequate. Thus, in 1929, the MMC and the government, now led by Chang's son, Chang Hsüeh-liang, negotiated an agreement to have the MMC become the Medical Faculty of Northeastern University. Given the political situation subsequent discussions were slow, but what could have been a very useful development was suddenly ended. When the Japanese invaded Manchuria following the 'Mukden Incident' of 18 September 1931 one of their first acts was the destruction of Northeastern University. Morton reports that 'Its teachers and students fled. Its library scattered in the streets.'⁶ Mamie Johnston, in her account of life in Manchuria at that time, notes that ordinary people were, not unreasonably, quite accustomed to changes in government.⁷ 'The flying of a particular flag meant little or nothing to ordinary people. Most households had a variety of such in stock: New China, Old China, and various Japanese ones, whichever victorious army chose to pass by, people flew whichever flag would please them!' Although many ordinary citizens and government officials had fled after the Japanese takeover and the creation of the puppet Manchukuo state, the operations of the MMC continued fairly normally. In fact, the Annual Report for 1931 states that after the Japanese invasion, classes were suspended for only a half-day (Saturday, 19 September). One requirement imposed by the new government was that all colleges had to appoint a Japanese advisor; the MMC was able to cope by appointing a long-time friend, Pastor Watanabe of the Japanese Congregationalist Church.

RECOGNITION BY THE UNIVERSITY OF EDINBURGH

In 1934, the University of Edinburgh recognised the MMC medical degree and this allowed MMC graduates to attend courses and take examinations for several Edinburgh medical diplomas. The 1934 Annual notes: 'We feel especially indebted to our Home Secretary, Dr W[illiam] A Young, for the careful way in which he helped to make things possible...'⁸ (Young had first arrived in Manchuria in 1899 and had been Professor of Public Health at the MMC and Superintendent of the

hospital from 1915 until he retired in 1933.) Recognition was proposed to the *Senatus Academicus* of the University of Edinburgh by the Faculty of Medicine on 10 May 1934 and was approved by the University Court on 29 May 1934. The minutes of both the *Senatus*⁹ and the Court¹⁰ confirm the opinion of the staff of the University Archives (private communication, April 2005) that 'This seems to have been part of a wider initiative to recognise medical qualifications which were not approved by the General Medical Council, though Moukden is the only institution named specifically.' As noted in the Annual Report for 1934, recognition was particularly fitting as the MMC 'was the only institution of its kind in the world which has its genesis in Scotland ... that the curriculum was based on that of the Scottish universities ... that the foreign staff was largely Scottish by birth and entirely Scottish trained ... and because the non-Scottish senior members of staff had all done post-graduate work in Scotland.' Christie, who was then living in Edinburgh, must have been very pleased. In 1934, medical training at the MMC lasted for seven years, but at about the same time, the government introduced new regulations imposing a schedule which meant that lectures and laboratory work for all medical students in Manchukuo would finish after only four years of intensive study, to be followed by one year of clinical work.

The political situation continued to deteriorate. Japan invaded additional regions of China in 1937; by 1938 they had occupied many coastal areas and in 1941 seized PUMC for use as a hospital. As time passed, the regulations proposed by the Manchukuo government proved more and more onerous. For example, new regulations for all schools, colleges and universities were introduced in 1938, these included a requirement to register the institutions as 'Juridical Persons'. Fulton² deals with this in great detail, but in essence registration required the MMC to accept certain conditions, among which were several that were not acceptable to a Christian college, such as acknowledging the Emperor and the founding of the Japanese Empire and, in particular, organizing 'rites or ceremonies, other than Christian, of a kind commonly associated with religion'. If the MMC did not register, the graduates of classes fourteen and fifteen would not be granted permits to practise. Registration was a very contentious matter and led to major differences of opinion within the missionary community and between the Manchuria Conference and the College.

In 1940, partly to avoid confusion with the SMMC, the English name of the College was changed to the Christie Memorial Medical College. (For consistency I shall continue to use the name Mukden Medical College, as it was briefly called the Shengjing Medical University from 1940, and in 1945 the English form of the name reverted to Mukden Medical College.) At



FIGURE 1 Mukden Medical College Crest. Reproduced by kind permission of the Osler Library at McGill.

about this time, Ellerbek, who was then sixty-six, offered his resignation as Principal; he was persuaded to remain for one more year but finally retired in May 1939. Pedersen, who was appointed to succeed him, took over at yet another very difficult time. Not only were conditions in Europe very tense but there was considerable disagreement within the College, and the mission community in general, as to how to deal with the Japanese and Manchouku authorities, and in particular the 'Juridical Person' requirement. Negotiations continued and eventually, on 13 March 1940, the Minister for People's Welfare of the Manchukuo Government approved the College's registration. (It was confirmed by Ordinances 308 on 11 April and 429 on 11 May.) On 15 June 1940, the Board of Management of the MMC held its last meeting and from then onwards the work would be in the hands of the Board of Directors of the Christie Memorial Medical College. The new Board had ten members representing the Scottish, Irish and Danish Missions, the staff of the College and the Hospital, and two Japanese representatives; unlike the Board of Management of the MMC there were no members from the local Chinese community.

JAPANESE OCCUPATION

In 1941, as the war continued in Europe, it appeared that Japan might soon join the German side. It was decided that the wives and children of foreign missionaries should return home and that only essential personnel

should remain. A few of the younger foreign doctors decided to stay for a few more months to complete their lectures. However, in December, the Japanese attacked Pearl Harbour and subsequently occupied Hong Kong. The remaining British missionaries, including eight MMC faculty members, were immediately interned, most in the English Club, but six, including Pedersen, were interned in the more austere Hong Kong and Shanghai Bank.¹¹ As Pedersen's nationality was puzzling to the Japanese (he was a Dane and thus a national of a country controlled by Japan's ally, Germany), his Scottish wife, Barbara, was allowed to remain in their home and eventually Pedersen was able to rejoin her. For most of the period between 1942 and 1945, they lived under house arrest at the mission-run Blind Girls' School. They were forbidden to have any involvement with either the College or the Hospital.

From 1941 to 1945, the MMC had a variety of Principals. Just before he was interned in December 1941, Pedersen named Gow as Acting Principal. Shortly afterwards, the Japanese appointed Professor Miura of the SMMC as Visiting Principal and the 1942 Annual Report notes that 'Dr Gow is Vice-Principal, responsible for day to day control'. Later, a new Japanese Principal, Dr Ohira, was appointed; he was a Christian and had previously been Inspector of Hygiene and Medical Education in Manchukuo. According to Fulton,² 'The successive Japanese heads of the College ... had done their best to help the College when and where they could' but the MMC could not have continued during the war years without the Chinese members of staff, especially Gow and Leo, and a few foreign doctors from neutral or German-occupied countries, such as the Norwegian Lutheran Martin Osnes.¹² In addition to Gow's contribution noted above, Leo continued as the Superintendent of the Hospital, and Wei En-lin was Dean. It is to their credit that students were admitted, and classes graduated every year between 1939 and 1945.

POST-WAR DEVELOPMENTS

On 15 August 1945, the Japanese surrendered and the Chinese flag was flown on the College buildings that very day.¹³ The Allies had ordered the Japanese to maintain order in Manchuria until they could take over, and it was not long before the Russian Army arrived. The Japanese Principal resigned and Pedersen, though ill, resumed his duties. By February 1946, the Allies determined that both Russian and Chinese Communist troops must leave Mukden, and the city was re-occupied by Chinese Nationalist troops. At about the same time, the UNRRA arrived and offered help in re-equipping the hospital. It was soon clear that, although living conditions were harsh, Western missionaries were going to be able to return, and as Pedersen's health was deteriorating, it was determined that he and his wife

should leave. When they departed in summer 1946, Gow and Leo were left in charge.

In early April 1946, a Joint Commission from the Irish and Scottish Missions arrived in Mukden and reported as follows:

'The only one of the hospitals we were able to see was Moukden, and it was a moving sight, no electricity, no water except what was carried, a great proportion of the bedding gone, very understaffed as to nurses, and yet every bed in that great institution – 339 in all – was occupied and the patients looked clean, comfortable and happy.'²

Owing to currency controls in both Britain and China, it was unclear to the Commission whether the MMC could be maintained as an independent Christian organization, but there was a strong desire to maintain the MMC with a reasonable proportion of foreign staff. Enquiries were made to see if the new government would provide an annual grant. In mid-1946, at about the time the Pedersens left Mukden, the first group of returning missionaries reached the city, Drs Hugh Garven (who had been Vice-Principal and Dean of the MMC in the late 1930s), Jack Leggate and Mary Findlay among them. They were joined soon afterwards by the Irish pathologist Agatha Crawford (daughter of the missionary Alexander Crawford who had encouraged Leo to apply for entrance to the MMC in 1912). She had arrived in China in November 1945 and, after language study in Beijing, reached the MMC in late December 1946.

The months after the Japanese defeat saw continuing political turmoil. Not only were people trying to recover from brutal occupation by the Japanese and liberation by the Russians, but there was a civil war raging between the Nationalist and Communist forces. North East China was one of several battlegrounds, travel and communication were difficult, funds were short, and inflation was raging. Despite this, the MMC continued to function, new classes were enrolled every year, and there was a graduating class every year except 1946. By the end of 1947, the College and hospital occupied 164 acres of land with 34 buildings, the library contained over 10,000 volumes and there were 35 faculty members and 191 students, including 39 women.¹³ Following the trauma of the occupation, the Protestant community in China and abroad started discussing greater co-operation; plans were made to combine the various Chinese Protestant churches and to appoint a Norwegian Lutheran to the faculty of the MMC, thus expanding the pool for recruiting foreign teachers.² However, in the summer and autumn of 1948, it became clear that the Communists would probably soon occupy all of North East China. Because it was anticipated that it would be difficult, at least

initially, to operate as a Christian institution, serious thought was given to evacuating MMC to Wuchang (Wuhan) and becoming temporarily connected with Huachung Christian University until the situation in Mukden stabilised and return was possible. However, it was decided to complete the lecture term and move after the examinations in mid-November but before these plans could be put into effect, the Eighth Route Army (balù jun), which had slowly been occupying more and more of North East China, completed their victory and, on 1 November 1948, occupied the city. Crawford notes that the final pathology examinations were held on 28–30 October and that ‘during the final written paper on Saturday morning [30th] gunfire was particularly loud ...’¹⁴

LIBERATION AND MERGER

Again, there was no immediate change to life at the MMC. In a letter written shortly after the Communists arrived, Crawford reports to her mother in Belfast (15 November 1948): ‘You would be surprised to know how normal and peaceful everything is. It is a great comfort that there was so little fighting, and already living conditions are easier, food cheap, and people look less starved and hopeless.’ Pai Hsi-ching, an MMC graduate (Class 8, 1930), who was the new government’s Director of Health Administration for the whole of North East China and had been on the staff of the MMC and the hospital from 1925 to 1933, visited the College shortly after the takeover. A new, Communist, principal, Dr Chen, was appointed. The graduation of the 52 members of Class 27 was held on 30 November 1948. According to Crawford’s account it was a rather tense affair with Communist leaders mixing rather uneasily with foreign Christian missionaries and doctors. As the weeks passed it became clear that, because no foreign funds could be brought into the country, the College would need to rely on government funding and would thus come under government control. From November 1948 to September 1949, no classes were held at the MMC, and in late December, most students and Chinese staff moved to the former SMMC (which had been renamed the National Shenyang Medical College). By late January 1949, negotiations to transfer both the MMC and the hospital to government control were continuing. Although plans were made to enlarge the MMC, this expansion never occurred. In mid-1949 equipment and teaching materials were removed to the SMMC site and the MMC students were merged with the much larger student body of the SMMC. *The Brief History of the MMC*¹⁴ notes that the last MMC class was Class 31, whose eleven members graduated, at the same time as Classes 29 and 30, in 1951.

In a letter dated 8 May 1949, Crawford reports that ‘the name now is really Liaoning Medical College (Liao Ning I K’e Ta Hsueh) ... and a notice on the door says

it is part of the University of China [sic].’ This notice may have been a few weeks premature, as the formal amalgamation occurred in June when the MMC and the SMMC were both absorbed by the China Medical University (CMU) – Zhongguo yi ke da xue. China Medical University had itself been created in 1940 (it was the Chinese Communist Party’s first medical school) when the Chinese Workers and Peasants’ Red Army Military Medical School and the Chinese Workers and Peasants’ Red Army Health School, both founded in 1931, were merged.^{15–17} Crawford and some of her colleagues left Mukden in mid-September 1949. The remaining foreign staff followed shortly afterwards. From its foundation in 1911 until its absorption into the China Medical University in 1949, the MMC had trained, in addition to many allied health personnel, 682 physicians.

In 1950, the Foreign Mission Committee of the Church of Scotland noted, ‘Moukden Medical College no longer exists as an institution conducted under its previous constitution’; it was thus decided to suspend all financial support for the College.² (The United Free Church of Scotland had become the Church of Scotland in 1929.) From the 1950s to the late 1970s there was only very limited contact with China. In the 1980s, the situation changed. Former foreign staff started to receive letters from old friends, and in 1984 Dr Mary Findlay – who had grown up in Manchuria, spoke Chinese and had taught at the MMC in the 1940s – was invited to return. Her invitation came from the China Medical University and in particular its Second Clinical College and Affiliated Hospital. This College and Hospital, which was the successor to the old MMC and the Mukden Hospital (now used as a cancer clinic), still had several MMC graduates on staff. She met Leo (he was then aged 94 and died in 1986) and learned that Gow had died during the ‘Cultural Revolution’. Findlay, on the first of several visits, taught medical English and was instrumental in helping to establish a link with the Faculty of Medicine of McGill University in Montreal.¹⁸ It is a happy coincidence that Edinburgh-trained physicians had founded the McGill medical school in the early nineteenth century¹⁹ and that its Dean in the 1960s had been Ronald V Christie, the son of Dugald; he had grown up in Mukden.

CHINA MEDICAL UNIVERSITY

China Medical University, whose main campus is still on the site of the former SMMC, is one of China’s premier medical universities and now has over 350 full professors in eighteen colleges, faculties and sections; 34 specialties have been authorised to grant doctorates and 49 to grant master’s degrees. In addition to being a major research institution with a strong clinical programme, CMU has one of China’s premier medical library schools (now called the School of Information

Management and Information Systems – Medicine)²⁰ and its library (containing many books inherited from both the MMC and the SMMC) is the largest medical library in northeastern China. Interestingly, in 2005, the idea of merging CMU with Northeastern University and becoming their medical faculty has been revived. As a colleague at CMU says: ‘Some people are unwilling, some others are otherwise.’ (Private communication, June 2005.) In the last twenty years, more old contacts have been renewed and fresh links have been forged; librarians, teachers and researchers have visited from both Edinburgh and Canada. Christie’s Canadian granddaughter (Janet Christie-Seely) and her children, all McGill medical graduates, have visited. So has Hanne Buch, the daughter of Ellerbek, and her husband and sister-in-law – all had been born in Mukden. Connections made many years ago, often by parents and grandparents, are maintained and lead to new friendships and new opportunities. Findlay²¹ reports that in 1985 Leo said: ‘Over the years there have been times when I have said to myself was it all worth while? When I see you all here tonight I can say: Yes, it was worth while.’ Clearly he was correct: ‘Christie of Mukden’ would be proud.

REFERENCES

- 1 Crawford DS. Mukden Medical College (1911–1949): an outpost of Edinburgh medicine in northeast China. Part I: 1882–1917 – building the foundations and opening the College. *J R Coll Physicians Edinb* 2006; **36**:73–9.
- 2 Fulton A. *Through earthquake, wind and fire; church and mission in Manchuria 1867–1950*. Edinburgh: St Andrew Press; 1967.
- 3 Cowdry EV. Anatomy in China. *Anat Rec* 1921; **20**(1):31–60.
- 4 Ellerbek SA. The Moukden Medical College. *Chin Med J* 1926; **40**:743–7.
- 5 Shields RT. Medical education. *China Christian Ybk* 1931; 355–81.
- 6 Morton TR. *Today in Manchuria; the young church in crisis*. New York: Friendship Press; 1939.
- 7 Johnston M. *I remember it well*. Viewed 25 April 2006. http://www.lisburn.com/books/i_remember_it_well/i_remember.html.
- 8 Fengtian yi ke da xue = Mukden Medical College. *Annual Reports*. 1911–1948. Mukden and Edinburgh; 1911–48.
- 9 University of Edinburgh. *Minutes of the Senatus, 10 May 1934*; (p.326).
- 10 University of Edinburgh. *Minutes of the Court, 29 May 1934*; (p.295).
- 11 Pedersen B. *China Diary, 1912–1946*. Typescript. Australia; 1950. (The Osler Library of McGill University holds a copy of Barbara Pedersen’s *China Diary*.)
- 12 Osnes M. Lægeerfaringer fra Mukden [Medical life in Mukden]. *Nord Med* 1950; **43**(1):27–30.

NOTE

For reasons of clarity, geographic, personal and institutional names are normally given in their most common English form as used during the period. To avoid confusion between the two English forms of the city of Mukden/Moukden (now Shenyang) it is standardised to Mukden. Though the term Manchuria is somewhat offensive to the Chinese because of its separatist connotations and because it invokes the memory of Japanese occupation under the puppet state of Manchukuo, it is used to describe the three northeastern provinces of China up to 1945.

ACKNOWLEDGEMENT

This article would not have been written without the encouragement of Dr Jean Doyle and the late Dr Mary Findlay, and could not have been researched without the help of my colleagues at the Osler and Life Sciences Libraries of McGill University and the China Medical University.

- 13 Fengtian yi ke da xue = Mukden Medical College. *Brief history of Mukden Medical College*. Shenyang: MMC Alumni Group; 1992.
- 14 Crawford AR. *It’s windy on deck: letters from China 1946–1949*. Montreal and Belfast: Typescript; 1990. (The Osler Library of McGill University holds a copy of the two volumes of Agatha Crawford’s China letters; the Public Record Office of Northern Ireland also has these, and additional Crawford family material, in its Private Papers Archive D-2003.)
- 15 China Medical University <http://www.cmu.edu.cn/> Viewed 20 October 2005.
- 16 *China Medical University 1931–1991*. Shenyang: China Medical University; 1991.
- 17 Gray L. *History of institutions sponsored by China Medical Board, 2000*. New York: China Medical Board of New York; 2003.
- 18 Crawford DS, Xiong DZ. Report of a cooperative venture between the China Medical University Library and the Medical Library of McGill University. *Bull Med Lib Assn* 1988; **76**(1):64–72.
- 19 Hanaway J, Cruess R. *McGill medicine: the first half-century, 1829–1885*. Montreal: McGill-Queen’s University Press; 1996.
- 20 Crawford DS, Xiong DZ. Medical library education in China. *Acad Med* 1990; **65**(8):502–4.
- 21 Scottish Churches China Group. *A picture history 1883–2003: from Mukden Medical College to No. 2 Clinical College of China Medical University*. Edinburgh: Scottish Churches China Group; 2004.