

MISSIONARIES AND CLERGYMEN AS BOTANISTS IN INDIA AND PAKISTAN

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Until recent years in India the Central Government only supported a few botanists who served in the Botanical Survey of India. Pakistan does not have a Botanical Survey and has only one botanist who is in charge of the new National Herbarium. A large amount of the plant collecting which was done in India from the days of the East India Company to the present was the work of amateurs living in India or by foreigners of many nations. The only history in which one can find the names of many of these workers is that of Isaac H. Burkill (1870-1965), who served in the Indian Forest Service for many years and was the first to publish a check-list of the plants of Baluchistan in 1909. Unfortunately he intentionally stopped his history at 1900, omitting hundreds of names of people who worked after that date. Only a few references to events after 1900 slipped in. His history entitled "Chapters on the history of botany in India" was published in parts in the Journal of the Bombay Natural History Society, 1957-63, and in 1965 was published in book form by the Botanical Survey of India in Calcutta. It is a mine of information but the ore is often so scattered that it is hard to find.

It is surprising how many people in India were interested in plant collecting, even in the early days, while the East India Company was in control i.e. before 1857. The Company may only have been interested in ways of making money, but many of their servants were interested in the languages, religions, customs, architecture and natural history of the country in which they lived for longer or shorter periods. Burkill was very much interested in the large number of Army officers, including some generals and the large numbers of medical men who were among the collectors. As I collected the names of authors and collectors who have worked in the Indo-Pak sub-continent I was interested to see that missionaries and clergymen had also done a great deal of work, no doubt because I had been on the staff of a missionary college in Rawalpindi from 1911 to 1960 when I retired as *Principal Emeritus*.

For many years the East India Company would not allow missionaries in their territories, fearing that their subjects would resent their presence. Because of this the first missionaries in India entered Danish territory with the permission of the King of Denmark, first at Tranquebar on the Coromandel Coast of South India, not far from Madras, and then at Serampore, near Calcutta, where three English Baptists, Carey, Marshman and Ward established a printing press and a college and where Carey started a horticultural garden where he could test plants.

South India

Modern botany first gained a foothold in India at Tranquebar through Johan Gerhard Koenig (1728-1784) a missionary surgeon. He was born in Courland, between Poland and Russia and studied botany in Sweden under Linnaeus. He was sent to the Danish settlement on the east coast of India near Madras as surgeon and natu-

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ralist. He was surgeon both to the trading post and the Moravian Mission. After ten years he left Tranquebar and worked four years for the Nawab of Arcot and then entered the E.I. Co. service as an economic botanist and was sent to Siam and the Malay Peninsula in order to find the home of such tropical plants as cardamom and gamboge which were cultivated profitably in India. During his years in Madras Koenig was an industrious collector and sent specimens to Banks in London, to Linnaeus and to Retzius. He introduced the binomial system of nomenclature to India.

Moravian missionaries were already in Travancore when Koenig arrived there in 1768. The first two missionaries were Jacob Klein, the elder, and Dr. C. S. John. Burkill states that the Moravians collectively agreed to collect and send plant specimens to Banks in London and that between 1775 and 1778 they sent 500. Wight states that Dr. John was the founder of the Missionary Garden at Tranquebar into which were introduced many plants of the Peninsula and also from Ceylon. Jacob Klein had a son, Jacob Gottfried, who was sent to Germany to study medicine and returned to the Mission in 1792 along with Benjamin Heyne. Heyne was both botanist and doctor and as he was not needed as doctor in Tranquebar Dr. John recommended him for Roxburgh's post at Samalcottah when he (Roxburgh) was transferred to Calcutta to take Kyd's place. Roxburgh (1751–1815) was the first E.I. Company botanist in South India. Benjamin Heyne did a great deal of collecting at Coimbatore and Bangalore in South India and died at Madras in 1819. Another of the Moravian missionary botanists was Johan Peter Rottler (1749–1836) who arrived in Tranquebar in 1776. Rottler did not owe his inspiration to Koenig, as he was a botanist when he arrived. He left the Tranquebar Mission in 1803 and worked on in India in other posts. Rottler could name his own plants and helped Heyne with his. Heyne sent many of his plants to Berlin where they were named by A. W. Roth (1737–1834).

Probably the first to collect in Cochin was Johan Friedrich Metz (1819–86) of the Basel Mission (Swiss). He was not a botanist but was glad to collect and sell plants in order to earn something to help put up buildings for his work. A German, named R. F. Hohenacker, employed him to collect specimens to be sold to German botanists. Metz collected first in Kanara, then in Coorg and finally at Keti near Ootacamund in the Nilgiri Hills.

Another Missionary, not a Moravian, who did a great deal of work was Bernhard Schmid, a German. He first lived in Tinnevely on the East Coast, but because of poor health, moved to the healthy Nilgiri Hills where his desire to collect plants developed. In 1831 he was visited by Baron von Huegel (1794–1870), a German by birth, but Austrian by choice, who collected for the Vienna Herbarium. Von Huegel's name appears again under Kashmir as he was one of the pioneer collectors there. Schmid gave him plants. In 1836 Schmid went to Germany on furlough and gave Nilgiri plants to J. C. Zenker (1799–1848) of Jena University who published a decade of his plants in 1845 and another in 1847. Schmid returned to the Nilgiris in 1845 and thereafter sent his dried specimens to Sir Wm. Hooker at Kew. He sent nearly 1000 specimens in the next few years and also sent some to Calcutta. He collected ferns and mosses as well as higher plants. Burkill also mentions a Rev. E. Johnson of Cochin, Malabar who collected orchids and died in 1831 (K). There was also a Rev. J. Barry of Jessore whose collection reached Thos. Thomson at Calcutta before 1854. The Rev. S. R. Fairbank of the American Congregational Mission was a collector and Beddome named *Lastrea fairbankii* for him in 1867.

In recent years there has been a new development. Roman Catholic clergymen, born in South India, have come upon the scene and I came to know two of them at Kew. Dr. Kunjamma M. Mathew, of St. Joseph's College, Tirrachirrapalli, Tamilnad, who is working on the flora of Kurseong and Dr. Cecil J. Saldanha of St. Joseph's College, Bangalore. He was Joint Editor of the Flora of Hassan Dt., Karnataka, with Dan H. Nicolson, 1976, published by the Smithsonian Institution, Washington, DC. He is a student of *Striga* of the Scrophulariaceae.

Although Koenig was the first modern, Linnaean trained botanist in any part of India collectors had been at work in Malabar, South India, a century before, while

the Dutch were in control of the Malabar Coast. Henry van Rheede, Dutch Governor of Malabar, suggested that there should be a *Hortus Malabaricus* (a Malabar Flora). In 1674 and 1675 Brahmins collected plants which were sent to Cochin where Mathaeus, a Carmelite missionary, made drawings, while descriptions were made in the Malabar language which were translated into Portuguese by Emanuel Carneiro, a Cochin interpreter. Hermann von Douep, secretary of the city of Cochin, translated this into Latin. The whole was superintended by a missionary there, named Caesarius. This work was published in Amsterdam between 1686 and 1703 in 12 folio volumes with 794 plates. This is naturally a landmark in the history of Indian botany. I wonder how many copies there are in India and how many of these pre-Linnaean names can be identified. I don't think that I have seen a copy.

The botanical situation in the Madras and Tranquebar areas of South India between the arrival of Koenig (1768) and the arrival of Robert Wight (1798–1872) whom Burkill calls "the last of the Madras botanists" was astonishing, considering the period in botanical history and the large number and variety of the persons participating in the effort to learn the South Indian flora. The collectors were Danes and British, missionaries and non-missionaries, trained botanists and pure amateurs, medical doctors and Civil Servants. Burkill says that he does not think that they were organized but Wight, who arrived in Madras, as the "United Brethren" period ended, states that they were. In Wight's *Prodromus* to his "Flora of the East Indian Peninsula," 1834, on page xi of the preface he states: "Most of these (botanists) formed themselves into a society for the purpose of promoting Botany: plants were industriously collected throughout all of the peninsula as well as in Ceylon and were not infrequently examined and named by the society in common; to such was usually added the word 'nobis' i.e. by us. By degrees, however, their opportunities of meeting became less frequent, and their confidence in themselves greater, so that Roxburgh, Klein and Rottler commenced attaching names without consulting with their friends; an interchange of specimens, however, still continued so that it was rarely difficult for the one to know what was intended by the other."

Roxburgh, who became the first of the East India Company botanists there went to Madras as an Army Surgeon in 1776 and did not receive a botanical post at Samalcottah until 1785, but during this period he was learning the flora from the Moravians. When in 1793 the Company decided to send Roxburgh to Calcutta to replace Kyd, Heyne of Tranquebar took his place.

I am indebted to Dr. Saldanha of Bangalore for data about Jesuit botanical work in South India of which I was unaware. "French Jesuits have worked in Madurai Province. They worked mainly on the Palni Hills flora." He quoted Matthew (*Exotic Flora of Kodaikanal*, pp. 4–5, 1969). "Sacred Heart College was established at Shembaganur in 1895, and some of its inmates started extensive exploration of the flora, fauna and archaeology of the Palni Hills. A. Saulière led the floristic exploration, assisted by S. Münch, C. Montaud and R. Rodriguez. Their extensive collections are to be seen at Kew, and elsewhere; A. Saulière published a list of his collections in 1914. A. Anglade painted over 1800 water-colour sketches of plants of these hills with useful notes attached. E. Bombert made a separate set of 110 similar paintings of the orchids of the area, native and introduced. A. Anglade, besides, prepared a set of over 300 samples of the timbers of the hills. G. Foreau made collections of Mosses in 1930 and concluded the work in another paper in 1961; his collections of the Lichens of Kodaikanal have been described by Moreau and Moreau in 1952."

"J. Pallithanan who worked on the flora of the Sirumalai Hills (Unpublished thesis) and K. M. Matthew are the Indian successors of this school. A young Jesuit V. S. Manickam has recently completed his thesis on the ferns of Kodaikanal."

"The Rev. J. Brassers, a Belgian Jesuit authored 'The Botany of Ranchi District' published by the Gov't of Bihar in 1951."

"In Sri Lanka, a student of Santapau worked on the 'Flora of Galle' for his doctorate and has since been collaborating on the 'Flora of Ceylon' project. He has

worked on several families. Rev. L. Cramer is a native of Ceylon." [Data from Cecil J. Saldanha]

Bengal

In Bengal one of the pioneer missionaries was the remarkable William Carey (1761–1834). Carey was a largely self educated, English Baptist who went to the Danish Settlement at Serampore near Calcutta as at that period the E. I. Co. was not admitting missionaries. He landed in Bengal in 1793 and first became an indigo planter at Malda in order to earn his living. The Baptist Mission at Serampore consisted of Carey, Marshman and Ward. Carey translated the Bible into Bengali and other Indian languages. Marshman was a printer and started a press in order to print the Bibles when translated. The Serampore press was available for Roxburgh to use when his *Flora Indica* was ready for printing. After Roxburgh's death Carey served as editor of Roxburgh's third edition which was issued in three volumes in 1832. It is said that once Carey was invited to a fashionable dinner party at which some highly placed officials were guests. Because of Carey's humble origin (his father had been a schoolmaster and Carey had worked as a cobbler), one of the guests in order to humiliate him, said "They say, Dr. Carey, that you were a shoemaker." Carey replied, "No, Sir, I was not a shoemaker, I was a cobbler."

Carey was not only a great linguist but he also collected plants and built up a large garden where he tested the plants for their economic value. He urged the need for a Government Agri-Horticultural garden and called the meeting where one was started.

In 1827 a Danish doctor, J. O. Voigt (1795–1843) came to Serampore and became a disciple of Carey. When Carey died Voigt took care of his garden and when he had the opportunity, having charge of the Calcutta Garden also for a short time, he combined the catalogues of the two gardens and published *Hortus Suburbanus Calcuttensis* in 1842. Another of Carey's disciples, Henry Piddington (1797–1858), a meteorologist, became Sec'y of the Agri-Horticultural Society and published in 1832 "English Index to the plants of India with their names in the various tongues of India," pts. I–III, Calcutta.

Bombay

In the Bombay Presidency two Roman Catholic missionaries connected with St. Xavier's College, have played very important parts as botanical authors and collectors. Father Ethelbert Blatter, S.J. (1887–1934) did important work on Arabia, the Bombay Presidency, Sind, Baluchistan and Waziristan. The titles of his botanical papers occupy more than three pages in Kazmi's Bibliography. The second, Dr. Hermenegild Santapau (1903–70), who was born in Spain, also did work of all-India importance and after Partition he was chosen to be Director of the Botanical Survey of India, the first and only foreign born botanist to receive such an honour. He was an author and collector but Blatter's work covered much more ground.

Father Blatter did his collecting with other Bombay botanists, not only with those working in his college. Many of his papers were published jointly with others. One of his chief collaborators was Prof. P. F. Hallberg of St. Xavier's who died in 1924 after gathering the specimens and illustrations for a book on the wild flowers of Kashmir, which Prof. Blatter had to finish (1928–29). One summer when my wife and I were collecting at Sonamarg in Kashmir I had the opportunity of meeting Hallberg who was collecting in the same area. Others who collaborated with him were Charles McCann of the Bombay Natural History Society, T. S. Sabnis, economic botanist, W. S. Millard and Joseph Fernandez who did a great deal of work in Arabia and Waziristan.

I remarked that the Moravian missionaries were the first collectors in South India. They were not the first in the United Provinces (now Uttar Pradesh) but they were the first to penetrate to the borders of Tibet and collect in Lahul. The Moravians selected some of the most difficult regions of the world in which to work, such as Labrador and Tibet. About 1856 they decided to open a mission in Tibet and when they were unable to obtain permission to enter from Leh in Ladak, they started a small station there, another at Kyelang in British Lahul, over the Rotang Pass from Kulu and another at Poo on the Sutlej. They started to learn Tibetan and to translate the Bible into that language, hoping that in course of time they could enter Tibet. They never succeeded although they waited for many years and when I visited Ladak in 1912 and 1913 and visited Lahul in 1913 we were welcomed by Moravian missionaries. Two of these pioneers were keen plant collectors, both in Ladak and Lahul, and several species have been named for them. They were the Rev. A. W. Heyde (fl. 1856–1879 & d. 1900) and the Rev. Heinrich A. Jaeschke (fl. 1856–71). Their collecting work was done in Ladak, Rupshu and Lahul and J. E. T. Aitchison's first report on "The flora of Lahul and its vegetative products" was based on Jaeschke's studies. This paper was published in *J. Linn. Soc. Bot.* 10: 69–101. 1865. The genus *Jaeschkea* Kurz was named in his honour.

The American Presbyterian Mission in the U. P. started educational work about 1835 and for many years has maintained the Ewing Christian College in Allahabad and helped maintain the Woodstock High School for missionary children in Landour, Mussoorie, which was attended by my wife, her mother and grandmother and my two daughters. The British missionaries, like the Britishers in general, sent their children home to Britain at a tender age fearing that their children would acquire the terrible thing they called a "chichee" accent. I have known hundreds of American children who graduated from Woodstock at about 18 and I do not know that any of them suffer from a terrible Anglo-Indian pronunciation though they can mimic it when they want to.

In the 1920's there were two keen botanists in the Ewing Christian College, the first was Dr. Winfield Dudgeon (1886–1932), an ecologist, who was the first President of the Indian Botanical Society. The second was Dr. Leslie Alva Kenoyer (1883–1932). He was also an ecologist and they travelled a good deal together in the Mussoorie Hills and in Tehri Garhwal to the snow line. Dr. Dudgeon published privately a check-list of the plants around Landour which I used when I spent eight summers in the Mussoorie Hills. In 1920 Dudgeon published "A contribution to the ecology of the Upper Gangetic Plain," *Jour. Ind. Bot.* 1: 296–324 and in 1923 the "Succession of epiphytes in the *Quercus incana* forest of Landour." He would climb out into a great oak from a second story window and find a botanical world in one tree. [See *Jour. Ind. Bot.* 3: 270–72. 1923]. Their most important paper was published jointly. "The Ecology of Tehri Garhwal," *Jour. Ind. Bot. Soc.* 4(7,8): 233–285. 1925.

Dr. Robert Leland Fleming (1905–) of the American Methodist Mission was on the staff of the Woodstock School, Mussoorie, U. P. from c. 1930 to 1950, and with his wife, an M.D., was founder of the United Mission Hospital of Kathmandu, Nepal. He lived in Kathmandu until 1979 and is now in Arizona, U.S.A. With his son he recently published the "Birds of Nepal" and he has collected ferns for more than 40 years, both in the U.P. and in all corners of Nepal. He has sent his first set to me which is now in this herbarium and smaller sets are in Chicago, Kew and the B.M. A good many ferns collected by others in the Mussoorie Hills are also here, collected by me, the Rev. James Colvin, Mrs. Cattell née De Vol, sister of the Taiwan pteridologist Charles De Vol and others.

I spent eight summer vacations collecting in the Mussoorie Hills, but only published "The ferns of Mussoorie and Dehra Dun" in the 150th Anniversary Volume

of the Royal Botanical Garden at Calcutta, Pt. 2: 159–172. 1942, Gov't Printing, Alipore, Bengal.

Kashmir

Many missionaries have spent vacations in Kashmir and small collections have been made and given to alma maters in the U.S.A. and no doubt to collections in Britain as well. Dr. Smythe of the C.M.S. Mission Hospital at Rainawari on the Dal Lake made a book of water-colour pictures of flowers of Kashmir which is preserved at Kew, which I named.

Miss Elsie Saunders of St. Stephen's Hospital, New Delhi (fl. 1910–40) made collections in Murree and Kashmir (K) and Dr. Arthur Neve (1858–1919) of the C.M.S. Hospital, Srinagar, Kashmir and a Leper Hospital was a fine mountain climber and explorer especially in the Karakorum Mts. (K).

Canon Stokoe, Chaplain of Srinagar in the 1920's and 30's was a great gardener and introduced many Kashmir wild flowers to his church garden. He had a beautiful personal herbarium, drying many of the flowers separately to preserve the colours better and then pasting the flowers on the herbarium sheets. One year we collected together in the Lidder Valley near Pahlgam. His collection must have gone to England.

I have done more collecting in Kashmir and Rawalpindi Dt. than anywhere else and over the years have collected in all of the major parts of the country from the Chamba line to Gilgit, and in Ladak, Baltistan and the parts of Kashmir now administered by Pakistan. My first two expeditions were made from Rawalpindi in the Punjab through Kashmir to Ladak. We rode push bikes from Pindi to Srinagar, at the beginning of each trip. In 1913, after a tour in Ladak, we crossed Rupshu into Lahul and then visited Kulu and Simla as well. For many years until 1948 my wife and I spent most of our vacations in Kashmir and I thought that when I retired and had plenty of time I would prepare a Kashmir flora. From 1948 on my summer vacations were spent in some corner of Pakistan as Kashmir was no longer open to us. I then turned my attention to Pakistan and the parts of Kashmir I had not worked in before 1947 which came to be administered by Pakistan. These areas were Gilgit, including Nagar and Hunza. Because I had collected so much in Kashmir, when in 1972 I published my "Annotated Catalogue of the plants of Pakistan," I included the whole of Kashmir. Before 1972 I had published a few papers on Kashmir ferns and in 1967 in the *Bulletin of the Survey of India* I published check-lists of the Cyperaceae and the Gramineae of Kashmir.

Sind

In the Pakistan Province of Sind the first collectors and authors were military people except for Wm. Griffith of the Calcutta Botanical Garden. One of the first to collect was Archdeacon Stead of Bombay who was a brother in law of Capt. W. S. C. Pinwill (1835–1920) whose regiment was stationed in Sind. Pinwill specialized in Cyperaceae (K). Both collected in the 1870's. Until Partition Sind was an appendage of Bombay and when Father Blatter with his friends was collecting in Sind the region was part of the Bombay Presidency and was included in books of the period such as Cooke's *Flora of Bombay* (1904–08) and Blatter's article on the "Flora of Bombay Presidency" in *J.B.N.H.S.* 18: 562–571. 1908. His most important paper on Sind (omitted in Kazmi's bibliography) is "Flora of the Indus Delta," Blatter, McCann and Sabnis, *Jour. Ind. Bot.* 1927–1929. As far as I know no missionaries living in Sind contributed to Sind botany. My own collecting in Sind was not extensive. Several times when in Karachi on business I collected there and c. 1957 I spent a week collecting with Drs. Norris and Dick-Peddie while they were teaching at Tandjam.

Baluchistan

In Baluchistan the first collecting was made possible, as it was in Sind, by the First Afghan War, 1839–40. Father Blatter with the collaboration of Hallberg and McCann did a great deal of work in Baluchistan as in Bombay, Sind and Waziristan. In 1919–20 they published "Contributions towards a Flora of Baluchistan." J.I.B., in parts, 1919–20. I have named many Baluchi plants but have not collected there extensively. Once while in Karachi I went on a day's collecting at the Hub River near sea level and twice I made trips of a week or more, based on Quetta, travelling to Ziarat, Kalat, Urak, Mashlaq etc. Both trips were in May, one in 1957 and the other in 1962. I prepared a check-list for the province which I used in my 1972 general catalogue of Pakistan. This is becoming out-of-date as Rechinger's *Flora Iranica* is coming out in parts. Dr. Ronald Holland, son of the famous eye surgeon, Sir Henry Holland, of Sind and Baluchistan was the only one of the C.M.S. missionaries who collected. His hospital was in Quetta (K). Father Santapau also collected in the Quetta area.

Burma

From 1822 the missionaries had a share in studying the Burmese flora. The very first was probably the Rev. Felix Carey who did a little collecting, sending some specimens to Roxburgh in 1822. He lacked his father's abilities. Another missionary, however, Francis Mason (1799–1874) first collected in Tavoy and then in Moulmein. In 1850 he published a book on Burmese plants and revised it in 1860 and after his death Theobald issued an enlarged edition in 1882. A chaplain, the Rev. C. S. P. Parish (1822–1897), was similarly a keen collector in Burma and the Andamans. He specialized in orchids. I happen to know a more recent educational missionary because he taught twice in Gordon College, Dr. Frederick G. Dickason (1904–), who first taught in the Punjab and then was assigned to Judson College, Rangoon where he specialized on ferns and obtained his Ph.D. with a thesis on the ferns of Burma in 1946 at the University of Ohio. When Judson was closed during the Japanese occupation, he taught at Gordon a second time. He has been working on a list of those who collected in Burma.

Northwest Frontier Province

Two British chaplains, probably with regiments serving on the frontier, did some collecting but neither did any writing. The first is the Rev. J. Williams who collected about Tank, Dehra Ismail Khan and Waziristan c. 1888 (D. D. & K). The second is Rev. A. G. Lester-Garland, brother of the English botanist L. V. Lester-Garland (1860–1924) who collected on the frontier in 1926–27. Dr. T. L. Pennell (1867–1912) of the C.M.S. Hospital, Bannu also did some collecting, as did Eric Tyndale-Biscoe, lecturer at Edwardes College, Peshawar who climbed and collected in the Barpu Nullah in Nagar in 1956. Mrs. Edmunds of the same college collected in Hazara.

A great deal of collecting has been done in the N.W.F.P. by staff and students of Gordon College, the American Presbyterian College at Rawalpindi in the Punjab where I lived most of the time between 1911 and 1962. I retired in 1960 but returned for six months in 1962. This collecting was supervised, first by me and then by my colleague and successor Prof. Eugene Nasir (1908–). He has now retired from the college but is serving as Joint Editor of the Flora of Pakistan with Dr. S. I. Ali of Karachi and is also in charge of the Stewart collections which are now part of the Herbarium of Pakistan at Islamabad. There are Pakistani members of the Gordon staff and a number of students who have done a great deal of collecting. They are mentioned in the section on collectors in my 1972 Pakistan Catalogue.

The Punjab

Few Punjab missionaries have made botany their hobby. The Rev. John Colvin of Lyallpur collected ferns in the Mussoorie Hills which are here in Ann Arbor. The Profs. Wm. Lillie and John Garrett from the Murray College, Sialkot, of the Church of Scotland have collected many mosses while on vacations in the Himalayas and H. N. Dixon in "Records of the Botanical Survey of India" in 1926 reported on those which had been collected on a trip to Gilgit. One of the botanists at the Forman Christian College, Lahore (American Presbyterian), Dr. Robert Joseph Rodin (1922–1976) collected in the Murree Hills, N.W.F.P. and Swat in the 1950's and returned to the University of California because of sickness in the family. He was a student of *Welwitschia* which he collected in Angola.

Living at Rawalpindi in the Punjab most of the time between 1911 and 1962 I had plenty of opportunity to collect in all parts of Kashmir and Pakistan, alone, with others or sending out students or laboratory assistants. These are too numerous to enumerate here. What we collected is now at Islamabad in the National Herbarium. For some twenty years I gave many duplicates to the New York Botanical Garden where I had my herbarium training and this institution distributed many of my duplicates to other institutions. Realizing after some years that my duplicates would be more useful at Kew than at New York I sent thousands of specimens there as long as I was in Rawalpindi with special emphasis on the grasses.

Eleven of my angiosperm papers are listed in Kazmi's Bibliography and three more under Pteridophyta. I am now working (1980) on a botanical history of Kashmir and Pakistan and expect to append my bibliography to it. My "Flora of Rawalpindi Dt." republished from the Pakistan Journal of Forestry 1957–58 and my 1972 "Annotated catalogue of the plants of Pakistan and Kashmir" are all that I need to mention here.

The only other missionary who worked in Rawalpindi has been mentioned under Burma where he spent most of his life. Dr. F. G. Dickason (1908–) collected in the Punjab and Kashmir in 1927–28 and was in Rawalpindi again while the Japanese were in Burma. *Dickasonia* and *Dendrobium dickasonii* L. O. Williams were named for him.