

THE CHRONOLOGY OF THE “LIVING FOSSIL”
METASEQUOIA GLYPTOSTROBOIDES (TAXODIACEAE):
A REVIEW (1943–2003)

JINSHUANG MA¹

Abstract. The discovery of extant material of the “living fossil” *Metasequoia glyptostroboides* from China in the 1940s was one of the greatest botanical discoveries of the 20th century. However, for various reasons, the details about its discovery and introduction worldwide from seeds have varied considerably in accuracy. Furthermore, the details of the current state of this species in China is not well known outside of China because of the language barrier. On the basis of primary documents including letters, manuscripts, and original publications, plus personal experience, the major events, important publications, and main scientists related to this story are recorded chronologically for the first time 60 years after the species’ discovery (1943–2003).

Keywords: China, discovery, living fossil, *Metasequoia glyptostroboides*, conifer, natural history, seeds, U.S.A.

The story of the discovery of the “living fossil” *Metasequoia glyptostroboides* Hu & Cheng (dawn redwood, Chinese redwood, or water fir in English, shui shan in Chinese) has been told and retold, but not all accounts are identical. Most are not accurate, and some are even wrong. In the past four years, while working on the natural history of *Metasequoia*, I reconstructed this history using primary materials. This chronology is based on a study of more than 1,000 documents, many of which were examined during personal visits to research institutions in Chongqing, Nanjing, and Beijing, China, in August 2002. I also met with people who knew the original collectors and researchers, and visited the hometown of *Metasequoia* in Lichuan, Hubei. However, since the tree’s discovery in the 1940s, there have been great changes in China, resulting in fragmentary, incomplete, and widely scattered original documents and publications. Further, nearly everyone involved in the discovery of this species has passed away. Nevertheless, I have tried to study all available, extant documents so as to record the major events of the past 60 years (1943–2003) related to this relict species.

1941

The original publication of *Metasequoia* based on fossils was published by Shigero Miki (1901–1974) of Kyoto University, Japan (Miki, 1941).

1943

On 21 July, Chan Wang (Zhan Wang, 1911–2000) and his assistant from the National Bureau of Forest Research, the Ministry of Agriculture and Forests at Chongqing (formerly Chungking), went to Enshi (formerly Enhsi) to visit the Shennongjia forest area enroute. They stopped at Wan Xian Agricultural High School, where C. Wang became ill. Lung-Hsing Yang (Long-Xing Yang, 1913–1999), the school principal and C. Wang’s classmate at Beijing University in the 1930s, told C. Wang that a strange tree existed in Moudao (formerly Motaochi) and asked him for its identification. Altering their original plans, C. Wang and his team detoured to Moudao for three days and collected a specimen of *Metasequoia* (*C. Wang 118*) on 21 July 1943. After returning from their expedition, C. Wang identified the specimen as *Glyptostrobus pensilis*, a common deciduous conifer of south China (Wang, 1948; Shao et al., 2000).

1945

During the summer, Chung-Lun Wu (Zhong-Lun Wu, 1913–1995), an assistant teacher from the National Central University at Chongqing, visited the herbarium at the National Bureau of Forest Research. C. Wang gave him one sheet of his specimen (*C. Wang 118*) with two cones. C. L. Wu later presented this specimen to Wan-Chun Cheng (Wan-Jun Zheng, 1904–1983), a dendrology professor at the National Central

¹Brooklyn Botanic Garden, 1000 Washington Ave., Brooklyn, New York 11225–1099, U.S.A. E-mail: jinshuangma@bbg.org

University, who immediately realized that this was not *Glyptostrobus* but something new (Cheng, 1984; Hu and Cheng, 1948).

Sometime later, W. C. Cheng visited C. Wang's institute to examine the other sheets of this number housed there and discussed the novelty with C. Wang's director, An Han (also known as Zhu-Ping Han, 1886–1961). W. C. Cheng used a temporary name, *Chieniodendron sinense*, for this species (Wang, 1948). (Note: this name is different from *Chieniodendron* in Annonaceae, described by Tsiang and Li [1964].)

After the news of the discovery of a new genus had spread to the National Central University at Chongqing, Toh Kan (Duo Gan, 1903–1961), a professor of Forest Management at the National Central University, told W. C. Cheng that he had seen the tree in the winter of 1941 and later collected some material but never preserved or identified it (Keng and Hsueh 1948; Zhang 1981).

1946

On 20 February, W. C. Cheng sent his graduate student, Chi-Ju Hsueh (Ji-Ru Xue, 1921–1999), to collect additional material from this tree. C. J. Hsueh followed C. Wang's directions (Hsueh, 1985) and went to Moudao, Wan Xian, Sichuan (currently administrated by Lichuan, Hubei). With C. Wang's collection in hand, as well as C. J. Hsueh's new collection (*C. J. Hsueh 5*; Hu and Cheng, 1948), W. C. Cheng was assured that the tree was a new genus and possibly even a new family.

In the middle of April, W. C. Cheng sent "two fragments of flowers and one foliage shoot" of his new conifer to Hsen-Hsu Hu (Xian-Su Hu, 1894–1968), then director of the Fan Memorial Institute of Biology at Beijing (formerly Peiping) for his opinion (Cheng, 1984; Hu and Cheng, 1948). Later, Elmer Drew Merrill (1876–1956) at the Arnold Arboretum of Harvard University was informed by W. C. Cheng about the discovery of three individual trees (Anonymous, 1948).

On 20 April, H. H. Hu at Beijing told E. D. Merrill that a new genus of Cupressaceae had been discovered and that it was known only from a single gigantic deciduous tree, around Wan Xian in Sichuan (letter at the Botanical Library Archives of Harvard University; cited as BLHU below).

On 22 April, H. H. Hu used the name *Pingia grandis* in a letter to the Earl of Rosse at Birr

Castle, Ireland, to describe this new discovery (Nelson, 1998; the original copy of this letter was not available to the present author, but the contents were related by Dr. Nelson who saw it in 1985).

Sometime between the last week of April and the first week of May, H. H. Hu matched the specimens collected by C. Wang and C. J. Hsueh with *Metasequoia*, a fossil genus published by S. Miki in 1941.

On 9 May, H. H. Hu sent this news to Ralph Works Chaney (1890–1971) at the University of California, Berkeley, and told him a new conifer, the living *Metasequoia*, had been found in China. H. H. Hu proposed to call the plant *Metasequoia sinica* (letter at the Archives of University of Oregon; cited as AUO below).

On 14 May, H. H. Hu sent another letter to R. W. Chaney (AUO) and informed him that a paper reporting this discovery was sent to *The Bulletin of the Geological Society of China*; at the same time, he also sent a copy of this manuscript to R. W. Chaney (Chaney, 1949). The leaf-bearing specimen examined by H. H. Hu (from W. C. Cheng) appears to have been one of the duplicate specimens collected by C. Wang under the number 118 in 1943, because C. J. Hsueh's first collection on 20 February 1946 was without leaves (see type; Hu and Cheng, 1948), and he had not yet made his second collection.

On 18 May, H. H. Hu's paper regarding the "living fossil" discovered in China was received by *The Bulletin of the Geological Society of China*, and it was published in December (Hu, 1946). This was the first official printed report about living *Metasequoia*. However, there was no specific name assigned to this species.

Also on 18 May, C. J. Hsueh traveled for a second time to Moudao for further collections and returned to Chongqing after 20 May with a specimen bearing both leaves and young cones (*C. J. Hsueh 51*; Hu and Cheng, 1948).

From May to July, the National Central University at Chongqing moved back to Nanjing (formerly Nanking), and during the same period the National Bureau of Forest Research (founded in 1941 at Chongqing) also moved to Nanjing, with C. Wang's herbarium collection.

On 27 November, H. H. Hu from Beijing sent a letter to R. W. Chaney (AUO) stating that "last month in Nanjing I have seen a complete specimen of the interesting '*Metasequoia viva*'."

1947

On 1 February, a report citing R. W. Chaney's statement about H. H. Hu's discovery of *Metasequoia* from China was published in the United States (Anonymous, 1947). This was the first report in a U.S. publication that a living tree of *Metasequoia* had been found in China. On 30 April, H. H. Hu sent a letter to R. W. Chaney (AUO), along with a reprint of his first paper on *Metasequoia*. In April, R. W. Chaney published a report that *Metasequoia* had been found alive in China (Chaney, 1947).

On 3 May, H. H. Hu sent a reprint of his first paper to E. D. Merrill but wrote "*Metasequoia viva*" in the letter (BLHU). On 10 May, W. C. Cheng from Nanjing sent a letter to E. D. Merrill (letter at the Archives of the Arnold Arboretum of Harvard University; cited as AAA below), stating, "I am sending you a set of complete specimens of our new living species of the genus *Metasequoia* which was discovered by me in Wan Xian, Eastern Sichuan. The description of the new species will be published jointly by H. H. Hu and me." This set of specimens (*C. J. Hsueh 5*) is housed in the Harvard University Herbaria (A). On the specimen, the scientific name for this new species was given as *Metasequoia glyptostroboides* Hu and Cheng.

On 17 May, E. D. Merrill sent a letter to H. H. Hu stating that "W. C. Cheng is sending me a specimen of the new *Metasequoia* (we already have one to which I have attached the printed and typed data you submitted)." The herbarium sheet, mentioned by E. D. Merrill from H. H. Hu, was the first specimen of *Metasequoia* sent from China. It is housed in the Horticultural Herbarium of the Arnold Arboretum of Harvard University today (the exact mailing and arrival time of this specimen remains vague). This specimen is without number but is annotated with two notes handwritten by W. C. Cheng and H. H. Hu separately on both of the packages. The specimen consists of two different fragments. One is a collection of staminate flowers and the other a foliage-bearing shoot with young cones. Both were collected by C. J. Hsiuh (*C. J. Hsueh 5* and *51*) on 20 February and 18 May 1946, respectively. The sheet is annotated *Metasequoia glyptostroboides* Hu & Cheng in what appears to be E. D. Merrill's handwriting.

On 31 May, the scientific name for the living fossil, *Metasequoia viva* Hu & Cheng, first appeared in a Chinese publication (Hu, 1947).

However, since this was a *nomen nudum* it is invalid.

In June, R. W. Chaney sent \$25 to H. H. Hu for seed collection, and in July, E. D. Merrill sent H. H. Hu \$250 for the same purpose (Fulling, 1976). From August to November, with financial support from the United States, W. C. Cheng sent his assistant, Ching-Tsan Hwa (Jing-Can Hua, born in 1921) to collect seeds and investigate the natural area of *Metasequoia*. C. T. Hwa flew from Nanjing to Chongqing, then traveled by boat from Chongqing to Wan Xian, Sichuan (then called Wan Hsien, Szechuan; now Wan Zhou, administered by Chongqing Municipality since 1997), and arrived at Moudao on 12 September. C. T. Hwa collected his initial specimens from the "Type Tree," the same tree from which material was collected by C. Wang in 1943 and by C. J. Hsueh in 1946 (*C. T. Hwa 2*, co-type; Hu and Cheng, 1948; Zhang 2000). In late September based on the information provided by local residents, C. T. Hwa found *Metasequoia* Valley (formerly Shui-sha-pa Valley), the original distribution center of *Metasequoia* (Cheng and Chu, 1948); and returned to Nanjing in later November with about 2 kg of *Metasequoia* seeds collected from different trees both in Moudao and in *Metasequoia* Valley (Zhang, 2000).

On 6 December, E. D. Merrill sent R. W. Chaney a fragment of a *Metasequoia* specimen (BLHU). On 17 December, R. W. Chaney sent a letter to E. D. Merrill acknowledging receipt of the *Metasequoia glyptostroboides* specimen (AAA). This sheet is still in the Jepson Herbaria of the University of California, Berkeley (UC).

On 24 December, W. C. Cheng at Nanjing sent a letter to E. D. Merrill stating that a small packet of seeds of *Metasequoia* had been sent to the Arnold Arboretum. He also told E. D. Merrill of his plan to distribute seeds to Chinese institutions in different provinces and to institutions at Kew, Edinburgh, Toulouse, and other countries (AAA). These were the first *Metasequoia* seeds sent from China. On 26 December, W. C. Cheng at Nanjing sent seeds directly to the Missouri Botanical Garden in St. Louis (Andrews, 1948); the Copenhagen Botanical Garden; the Arboretum at Horsholm and its satellite garden, the Forest Botanical Garden, Charlottenlund, Denmark (Hendricks and Sondergaard, 1998); the Amsterdam Hortus Botanicus of the Netherlands (Belder and Wijnands, 1979); and India (Raizada, 1948).

1948

On 5 January, E. D. Merrill sent a letter to W. C. Cheng acknowledging receipt of the first shipment of seeds (AAA). The seeds were redistributed without delay to other institutions and individuals in the United States and the U.K. (Merrill, 1948a,b).

On "16 January," H. H. Hu sent a letter from Beijing to Thomas Harper Goodspeed (1887–1966), then Director of the University of California Botanical Garden, Berkeley, along with two small bags of seeds, some fragments of leafy branchlets, a male inflorescence and two cones, and a lithographic plate of *Metasequoia glyptostroboides* (this set of specimens is in UC, including fragments of *C. J. Hsueh* 5 and 51, and *C. T. Hwa* 2). This letter was dated "16 Jan 1947"; however, the date is incorrect because the seeds were not collected until autumn 1947. This error is understandable since the new year 1948 had just begun, and it is commonplace to mistakenly write the new month and date with the old year (Cronquist, 1977). On 17 January, H. H. Hu sent seeds to the Earl of Rosse at Birr Castle, Ireland, stating "You will be the first European friend I send these seeds, and I hope they will grow well in your garden and prosper in thousands of years in the future" (letter in the Archives of Birr Castle, Ireland).

On 28 January, W. C. Cheng in Nanjing sent the completed manuscript on *Metasequoia* to E. D. Merrill, which he had sent to H. H. Hu the previous year. W. C. Cheng told him that he could use the specific name, *Metasequoia glyptostroboides*. W. C. Cheng informed E. D. Merrill about the general history of *Metasequoia* on his request for a paper (AAA). Also on 28 January, the news of the discovery of *Metasequoia* and the arrival of seeds at the Arnold Arboretum was reported widely in newspapers across the United States, and later followed by other newspapers.

On 6 February, E. D. Merrill's first paper reporting the discovery of "a living *Metasequoia* from China" was published in *Science* (Merrill, 1948a).

On 13 February, R. W. Chaney of the University of California, Berkeley, and Milton Silverman (1910–1997) of the *San Francisco Chronicle* left the West Coast and visited the *Metasequoia* area in Wan Xian until the end of March. M. Silverman wrote a series of six vivid articles about the trip while in China, which appeared in the *San Francisco Chronicle* from

25 March to 30 March, as well as another following his return on 5 April. C. T. Hwa was R. W. Chaney and M. Silverman's guide to the *Metasequoia* area. After R. W. Chaney and M. Silverman's return from Wan Xian to Chongqing, C. T. Hwa returned from Wan Xian to the field and stayed from March to May to collect additional specimens (Zhang, 2000). M. Silverman returned to California on 29 March, and R. W. Chaney returned to California on 2 April (Silverman, 1990).

On 27 February, E. D. Merrill sent a letter to W. C. Cheng, since he had not yet received the second large shipment of *Metasequoia* seeds. However, he did receive a good-sized package of seeds directly from H. H. Hu (BLHU). On 4 March, W. C. Cheng sent 200 g of the *Metasequoia* seeds to E. D. Merrill, and another 200 g on 8 March (BLHU). On 11 March, E. D. Merrill sent a letter to H. H. Hu acknowledging receipt of the seeds (BLHU, sending and receipt information not available) and stated that he had sent out about 70 packets the day before to individuals who had requested them in all parts of the United States, England, Scotland, Ireland, and the European continent.

On 16 March (Spongberg, 1990), or 20 March (Nelson, 1998), the second shipment of a large package of seeds from W. C. Cheng finally arrived at the Arnold Arboretum. On 26 March, E. D. Merrill sent a letter to W. C. Cheng stating that a few days earlier the large package (of seeds) had been delivered (AAA), without mentioning the time of arrival.

On 25 March, M. Silverman's first report appeared in the *San Francisco Chronicle*; the story had been broadcast coast-to-coast the previous night by NBC.

On 30 March, W. C. Cheng sent a complete specimen of *Metasequoia* through R. W. Chaney to E. D. Merrill. This included a duplicate of the type numbers of *C. J. Hsueh* 5 and *C. T. Hwa* 2, collected in 1946 and in 1947 (BLHU). This set of specimens is housed in the Harvard University Herbaria (*C. J. Hsueh* 5, A) and in the Smithsonian Institution (*C. T. Hwa* 2, US). On 20 April, W. C. Cheng sent a letter to E. D. Merrill informing him that he sent *Metasequoia* seeds to him through R. W. Chaney (BLHU).

On 25 April, W. C. Cheng printed his manuscript "*Metasequoia glyptostroboides*—'Living Fossil' of 60 millions years ago," which was not published in Chinese until his death (Cheng, 1984).

On 8 May, the meeting of the *Metasequoia* Conservation Committee was held in Nanjing, with six representatives from the Ministries of Interior, Education, Agriculture, and Forestry, the Academia Sinica, the National Central Museum, and the National Central University attending. The official *Metasequoia* Protection Committee was founded with nine members from various organizations within China, including H. H. Hu and W. C. Cheng, as well as R. W. Chaney and Roscoe Pound (1870–1964), former dean of the Harvard University Law School, then Minister of Justice, Nanjing. John Leighton Stuart (1876–1962), the United States Ambassador to China (1946–1949), was appointed as the consultant (*Metasequoia* Conservation Committee, 1948).

On 14 May, the first Chinese newspaper article regarding this tree was published in *National Central Daily* (Nanjing).

On 15 May, H. H. Hu and W. C. Cheng's paper on living species of *Metasequoia* was finally published (Hu and Cheng, 1948). This is the original description of the living species, with illustration, syntypes, and distribution information.

In June, the American Philosophical Society granted E. D. Merrill and R. W. Chaney \$1,500 for W. C. Cheng's expedition to the *Metasequoia* area as well as R. W. Chaney's publication (Chaney, 1951; Committee of the American Philosophical Society, 1948).

In July, another Dawn Redwood Expedition team joined by the California Academy of Sciences (USA) and the Lingnan University (then at Canton, i.e., Guangzhou), travelled to the *Metasequoia* area, led by Judson Linsley Gressitt (1914–1982). The expedition focused mainly on insects and other animals, and stayed in the local area of the *Metasequoia* for a few months (Gressitt, 1953). This was the last foreign team in the area before the People's Republic of China was founded in 1949.

On 7 August, W. C. Cheng left Nanjing for the *Metasequoia* area and returned to Nanjing in the middle of September. He was accompanied by C. T. Hwa and Kuei-Ling Chu (also known as Chung-Hsiang Chu, i.e., Zhong-Xiang Qu, 1904–1990). After their return to Nanjing on 18 September, C. T. Hwa continued collecting in the local area for another two months (Zhang, 2000).

In September, H. H. Hu's "How *Metasequoia*, the "living fossil," was discovered in China" was published in the English (Hu, 1948). This

was the first direct report from China about the discovery. It has been copied and re-printed many times and in many different versions around the globe in several languages.

On 29 November, W. C. Cheng sent E. D. Merrill another 500 g of seeds (BLHU).

1949

In September, the first paper on the forest ecology of the *Metasequoia* area was published (Cheng and Chu, 1949). Later the second author and W. S. Cooper (1884–1978) from the University of Minnesota published it in English (Chu and Cooper, 1950).

1950

H. C. Sze's (1901–1964) 13 most popular papers on *Metasequoia* (1948–1949) were reprinted together as a book (Sze, 1950).

The Fan Memorial Institute of Biology at Peiping founded in 1928 and led by H. H. Hu, and the Botanical Institute of the National Academy of Peiping founded in 1929 and led by T. N. Liou (1898–1975), were transferred into a new Institute of Systematic Botany, Academia Sinica. This name changed to the Institute of Botany, Chinese Academy of Science, in 1953, as it is known today. H. H. Hu worked there as a professor (i.e., curator) for the rest of his professional life until his death during the Cultural Revolution.

1951

R. W. Chaney's paper "A revision of fossil *Sequoia* and *Taxodium* in Western North America based on the recent discovery of *Metasequoia*" was published (Chaney, 1951).

1952

The Department of Forestry was separated from the National Central University and combined with related subjects and departments in other universities and colleges, forming a new Nanjing Forestry College (today, the Nanjing Forestry University), W. C. Cheng worked there as a professor and president of the college until 1961. In 1962, he was appointed vice president of the Chinese Academy of Forestry in Beijing, and he became president in 1978. He worked there for the rest of his professional life.

1960

S. D. Richardson of New Zealand published his book *Forestry in Communist China*. This may be the first report regarding the "living fossil" *Metasequoia glyptostroboides* and W. C.

Cheng's role in China since 1949. The author stated that W. C. Cheng discovered this tree. Later R. W. Chaney wrote a critical review regarding W. C. Cheng's contribution to the discovery of this tree (Chaney, 1969).

1961

The IX Botanical Conference (Montreal 1959) through the International Code of Botanical Nomenclature—XIII Fossil Plants (Lanjouw, 1961) conserved and approved the name *Metasequoia* Miki ex Hu et Cheng 1948 with the type *M. glyptostroboides* Hu et Cheng ascribed by *Metasequoia* Miki (1941) with type *M. disticha* (Herr) Miki (*Sequoia disticha* Herr).

1962

On 17 February, the *People's Daily* (China) published the "*Metasequoia* Poem," written by H. H. Hu (in Chinese), with commentary and introduction by Yi Chen (1901–1972), the late Vice Premier of China (dated 8 February 1962).

1966

"On *Metasequoia*," the English version of H. H. Hu's "*Metasequoia* Poem," translated by the author himself, was published in Hong Kong (Hu, 1966). This was H. H. Hu's last publication of his professional career.

1968

On 16 July, H. H. Hu, the original author of this living fossil, died at the age of 74. Eleven years later he was cleared of all charges, and an official memorial service was held in Beijing on 25 May 1979. His ashes were permanently buried under the trees of *Metasequoia* at the Lushan Botanical Garden, Jiujiang, Jiangxi, on 10 July 1984 (Shi, 1996).

1973

The *Metasequoia* Natural Reserve and Original Trees Management Station was founded in Xiaohu, Lichuan, Hubei, by the Chinese government to protect the original native trees of *Metasequoia*. The entire native population of *Metasequoia* was surveyed and recorded in 1974, 1978, and 1984. In the latest inventory of 1986–1988 (Wang and Guo, 2002), a total of 5,746 trees with a dbh more than 20 cm were recorded in Lichuan, Hubei, another 5 trees in Longshan, Hunan province (SE, c. 100 km from Lichuan), and 6 trees in Shizhu, Sichuan province (now administrated by Chongqing; SW, c. 75 km from Lichuan).

1976

Edmund Henry Fulling's (1903–1975) manuscript "*Metasequoia*—Fossil and Living" was edited and published in *Botanical Review*. This famous work reviewed the literature and discussed the introduction of *Metasequoia* seeds into the United States and included more than 72 pages of literature citations. It is still a very important document in today's natural history of *Metasequoia*, even though it was not comprehensive in its coverage (Cronquist, 1977; Ma, 2003).

1978

On 1 October, the first book on *Metasequoia* was published in China, with an emphasis on forestry and silviculture (Liu et al, 1978).

1979

The first popular book on *Metasequoia* was published in China (Hu, 1979).

On 16 August, W. C. Cheng from Beijing sent a reply to the Forest Bureau of Lichuan, Hubei, regarding the story of the discovery of *Metasequoia*, which later was published in the local journal (Cheng, 1980). This was the first paper to address the long-term dispute about who really first discovered this tree, which had been ongoing in China since 1949.

1980

In January, the first floristic work on the *Metasequoia* area was reported in the United States (Hu, 1980). A total of 550 species in 301 genera representing 127 families of the vascular plants were recognized from the five combined collections from China in the Harvard University Herbaria. The work included detailed lists and analyses of the floristics. It was followed by a revision a few years later, mainly on the woody plants of Lichuan, Hubei (Tang, 1987).

From 5 to 10 October, five American botanists were the first Westerners to revisit the *Metasequoia* area since the establishment of the People's Republic of China in 1949 (Bartholomew et al., 1983). They were Bruce Bartholomew, California Academy of Sciences (then at the University of California Botanical Garden, Berkeley; the team leader), David E. Boufford, Harvard University Herbaria (then at the Carnegie Museum of Natural History), Theodore R. Dudley (1936–1994), U. S. National Arboretum, James L. Luteyn, New York Botanical Garden, and Stephen A.

Spongberg, Polly Hill Arboretum (then at the Arnold Arboretum of Harvard University).

1981

The first scientific and educational film in color of *Metasequoia* was made by Hubei Film Factory in Wuhan, Hubei. A review was published in the same year (Wang, 1981).

On 14 May, Yan Zhang, the editor of *Plants* (China), recorded her conversational notes with W. C. Cheng regarding the discovery of *Metasequoia* (Zhang, 1981).

1984

In the spring, *Metasequoia* was chosen as the “City Tree” of Wuhan, the capital of Hubei.

1990

The first personal account concerning the expedition to the *Metasequoia* area was published in English (Silverman, 1990). It detailed Silverman’s personal experience when visiting the hometown of *Metasequoia* with R. W. Chaney in the spring of 1948, as well as the argument on seed introduction in the United States.

Since this year, John E. Kuser of Rutgers University, New Jersey, led a research team from the United States and cooperated with MingHe Li from Huazhong Agricultural University at Wuhan, Hubei, on a large scale *ex situ* conservation program on *Metasequoia glyptostroboides*. They successfully selected about 50 clones from parent trees collected directly from central China. The whole cloned plants were cultivated in Ryders Lane, New Jersey, and the Dawes Arboretum, Ohio (Kuser et al., 1997). This is the largest *ex situ* collection of this species outside of China.

1995

On 15 January, Kiyooki Saito published the first book in Japanese on this famous tree, with detailed information about S. Miki’s career as well as the cultivation of this tree in Japan (Saito, 1995).

1996

Pizhou City (formerly Pi Xian), Jiangsu province, successfully planted more than 5 million mature *Metasequoia* trees during the 1970s, with plantings more than 200 km long along the main freeways. This is the largest cultivated population of *Metasequoia* outside of Lichuan, Hubei, in China. This city is also called “the City of *Metasequoia*” in China (Pizhou Shuishan Editorial Group, 1996).

1999

A special publication entitled “*Metasequoia* After Fifty Years” was published in *Arnoldia*, a publication of the Arnold Arboretum of Harvard University, which reviews current information on cultivated *Metasequoia* both in the world (Sato, 1999) and in north America (Kuser, 1999).

A book called *The Discovery and Research of Metasequoia* was published in China (Wang, 1999), emphasizing the argument about who first found this tree. A critical review of this book has been completed by the author of this paper (Ma, 2003).

2000

On 30 January, Chan Wang, the collector of the first specimen of *Metasequoia*, passed away in Shenyang, Liaoning. His memorial paper was published in *Taxon* in August of the same year (Shao et al., 2000). This was the first time that the scientist’s whole biography from China and the *Metasequoia* story were fully reported in this international journal.

On 1 March, a website on *Metasequoia* was launched at www.metasequoia.org in English (Ma et al., 2000).

The first research book on *Metasequoia* was published in Chinese (Zhang, 2000). This was Zhang’s summary of his scientific observations and research for more than 30 years, with the *Metasequoia* poem of H. H. Hu in 1962 providing the foreword and C. T. Hwa’s recount of his *Metasequoia* expeditions during 1947–1948 as the appendix. C. T. Hwa made a total of four trips to the hometown in 1947–1948. C. T. Hwa was a senior editor of the China Forest Press in Beijing for more than 35 years before retiring in 1988. He is the only person involved in the initial discovery of *Metasequoia* still alive today, residing in Beijing.

2002

The First International *Metasequoia* Symposium was held at Wuhan, Hubei, 5–7 August; followed by a field trip to the hometown of *Metasequoia* in Lichuan, Hubei, 8–13 August. More than 40 representatives from China, the United States, France, and Switzerland attended.

On 13 August, after being lost for six decades, the first specimen of *Metasequoia*, collected by C. Wang in 1943 (*C. Wang 118*), which triggered the publication of the living fossil by H. H. Hu and W. C. Cheng, was

rediscovered by the current author. It was found in an abandoned “herbarium” that had been without resources for management for more than 20 years: Jiangsu Forestry Academy, Nanjing (formerly the National Bureau of Forest Research) (Ma and Shao, 2003).

The discovery of the “living fossil” *Metasequoia glyptostroboides* is certainly a great event in botanical history. However, the history of the introduction of seeds worldwide is very patchy, especially in areas outside North America and Europe. It would be quite valuable if readers published their own accounts of this tree in

their local areas or countries, or shared their information with the author. Of particular interest is current information about cultivation and the original distribution of seeds from 1947 through the 1950s, either directly from Wan-Chun Cheng (Wan-Jun Zheng) at the National Central University in Nanjing (Nanching/Nanking) or Hsen-Hsu Hu (Xian-Su Hu) at the Fan Memorial Institute of Biology in Beijing (Peiping/Peiking), or indirectly from Elmer Drew Merrill at the Arnold Arboretum of Harvard University or Ralph Works Chaney at the University of California, Berkeley.

ACKNOWLEDGMENTS

Sincere thanks to many friends and colleagues worldwide for their various forms of help and assistance, especially the following: Kathy Crosby and Atiba Alexander at the Library of the Brooklyn Botanic Garden, Judy Warnement and her colleagues at the Botanical Library of Harvard University, Carol David at the Horticultural Library of the Arnold Arboretum of Harvard University, Stephen Simon at the Library of the New York Botanical Garden, Duffy Knaus and Linda Long at the Library of the University of Oregon (Eugene), Emily Wood (A, GH), Susan Kelley (Arnold Arboretum), Diane M. Erwin (Museum of Paleontology, University of California, Berkeley), and Barbara J. Ertter (UC) helped search for specimens and provided related information. Hebert W. Meyer (Florissant Fossil Beds National Monument, Colorado), John E. Kuser (Rutgers University, New Jersey), E. Charles Nelson (England), Earl of Rosse (Ireland), Folmer Arnklit and Jette Dahl Moller (University of Copenhagen Botanical Garden), YunPing Huang (Wuhan Institute of Science and Technology, Hubei), and JianQiang Li, XiaoDong Li, and DengQi Fu (HIB) provided documents and publications. DeKun Hu (Peiking University) and XiaoJiang Hu (Harvard University), son and grand-daughter of Hsen-Hsu Hu; SiKun Zheng (Beijing), son of Wan-Chun Cheng; MingDi Yang and MingQi Yang (Yuxi, Yunnan), son and daughter of Long-Hsing Yang; and JiaPing Xue (Illinois) and JiaCi Xue (Kunming), daughters of Chi-Ju Hsueh, provided background information on

related scientists in China. Hang Sun (KUN), YuYing Geng, Fu Yang, Qing Cai and ZhenDai Xia (PE), GuoFan Shao (Purdue University), Chung-Kwei Wang (Arizona), and ZhengXiang Tan (Institute of Applied Ecology, Chinese Academy of Sciences), students of Chan Wang; YuJun Zhang (from Beijing Forestry University, now at Shimane University of Japan), PingPing Ling (NAS) provided key help and major assistance for this work. I am grateful to Ching-Tsan Hwa, the seed collector of *Metasequoia* in the autumn of 1947 and discoverer of the original *Metasequoia* forests in *Metasequoia* Valley, who is an 82-year-old retired senior editor from the China Forest Press in Beijing, for his personal interview in August 2002 in Beijing. The Brooklyn Botanic Garden supported my trip to China to attend the First International *Metasequoia* Symposium at Wuhan and visit to the hometown of *Metasequoia* as well as to several institutions in Chongqing, Nanjing, and Beijing. Thanks to Steve Clemants, Gerry Moore, Angela Steward, Steve Glenn, Mark Tebbitt, and Kerry Barringer, not only for their kindly support for this work, but also for their daily assistance and help. And finally thanks to Kerry Barringer and Mark Tebbitt (BKL), Herbert W. Meyer (Florissant Fossil Beds National Monument, Colorado), Anthony R. Brach (MO, at A, GH), and David E. Boufford (A, GH) for their reviews of the manuscript as well as their helpful comments and suggestions, and to Gustavo Romero for his kindly suggestions as well as the editing work on this manuscript.

LITERATURE CITED

- ANDREWS, H. N. 1948. *Metasequoia* and the living fossils. Missouri Bot. Gard. Bull. 36(5): 79–85.
- ANONYMOUS. 1947. American redwood trees have Chinese relatives. Sci. News Let. 51(5): 79.
- ANONYMOUS. 1948. Re-enter *Metasequoia*. Botanical find. As but a day. Harv. Univ. Alum. Bull. 50(9): 388.
- BARTHOLOMEW, B., D. E. BOUFFORD, AND S. A. SPONGBERG. 1983. *Metasequoia glyptostroboides*—Its present status in Central China. J. Arn. Arb. 64: 105–128.
- BELDER, J., AND D. O. WIJNANDS. 1979. *Metasequoia glyptostroboides*. Dendroflora 15/16: 24–35. (In Dutch with English summary.)
- CHANEY, R. W. 1947. Tertiary centers and migration routes. Ecol. Monogr. 17(2): 140–148.
- . 1949. The redwood of China. Pl. & Gard. 4(4, for 1948): 231–235.
- . 1951. A revision of fossil *Sequoia* and *Taxodium* in Western North America based on the recent discovery of *Metasequoia*. Trans. Amer. Philos. Soc., 40(3): 171–263.
- . 1969. Forestry inside the bamboo curtain. Ecology 50: 161–162.
- CHENG, W. C. 1980. Discovered and described processes of *Metasequoia*. Lichuan Sci. & Techn. 3: 4–5. (In Chinese.)
- . 1984. *Metasequoia*—“Living fossil” of 60 million years ago. Plants (China) 1: 42–43. (A posthumous work, original manuscript dated March 25, 1948; in Chinese.)
- CHENG, W. C., AND K. L. CHU. 1949. The current state of the forests in Shui-hsa-pa, Lichuan, Hubei. Science (China) 31: 73–80. (In Chinese.)
- CHU, K. L., AND W. S. COOPER. 1950. An ecological reconnaissance in the native home of *Metasequoia glyptostroboides*. Ecology 31: 260–278.
- COMMITTEE OF THE AMERICAN PHILOSOPHICAL SOCIETY. 1948. Report of committee on research. Yearb. Amer. Philos. Soc. 1948: 150–151.
- CRONQUIST, A. 1977. Editor’s notes on *Metasequoia*. Bot. Rev. 43: 281–284.
- FULLING, E. H. 1976. *Metasequoia*, fossil and living. Bot. Rev. 42: 215–314.
- GRESSITT, J. L. 1953. The California academy—Lingnan dawn redwood expedition. Proc. Calif. Acad. Sci. 28: 25–58.
- HENDRICKS, D. R., AND P. SONDERGAARD. 1998. *Metasequoia glyptostroboides*, 50 years out of China—Observations from the United States and Denmark. Dansk Dendrol. Arsskr. 6: 6–24.
- HSUEH, C. J. 1985. Reminiscences of collecting the type specimens of *Metasequoia glyptostroboides*. Arnoldia 45(4): 10–18.
- HU, H. H. 1946. Notes on a palaeogene species of *metasequoia* in China. Bull. Geol. Soc. China 26: 105–107.
- . 1947. *Sequoia* of Western America and *Metasequoia* of Wanhhsien, Szechuan. Observation (China) 2(14): 10–11. (In Chinese.)
- . 1948. How *Metasequoia*, the “living fossil,” was discovered in China. J. New York Bot. Gard. 49: 201–207.
- . 1966. On *Metasequoia*. Eastern Horizon (Hong Kong) 5(4): 26–28.
- HU, H. H., AND W. C. CHENG. 1948. On the new family Metasequoiaceae and on *Metasequoia glyptostroboides*, a living species of the genus *Metasequoia* found in Szechuan and Hupeh. Bull. Fan Mem. Inst. Biol. New Series 1: 153–163.
- HU, S. Y. 1980. The *Metasequoia* flora and its phyto-geographic significance. J. Arn. Arb. 64: 41–94.
- HU, Z. Q. 1979. *Metasequoia’s Life*. Hunan Science and Technology Press, Changsha, Hunan, China. (In Chinese.)
- KENG, K. H., AND C. J. HSUEH. 1948. On *Metasequoia* again. National Central Daily, Nanjing, China (11 September 1948). (In Chinese.)
- KUSER, J. E. 1999. *Metasequoia glyptostroboides*: fifty years of growth in North America. Arnoldia 58(4) and 59(1): 76–79.
- KUSER, J. E., D. L. SHEELY, AND D. R. HENDRICKS. 1997. Genetic variation in two ex situ collections of the rare *Metasequoia glyptostroboides* (Cupressaceae). Silvae Genet. 46: 258–264.
- LANJOUW, J. 1961. International Code of Botanical Nomenclature—XIII. Fossil Plants. Intern. Bur. Pl. Tax. and Nom. IAPT, Utrecht.
- LIU, Y. C., T. X. ZHOU, AND P. L. SU. 1978. *Metasequoia*. Hubei People’s Press, Wuhan, Hubei, China. (In Chinese.)
- MA, J. S. 2003. On the unsolved mystery of *Metasequoia*. Acta Bot. Yunn. 25(2): 155–172. (In Chinese, with detailed summary in English.)
- MA, J. S., AND G. F. SHAO. 2003 (in press). Re-discovery of the first collection, the living fossil, *Metasequoia*. Taxon 52(3).
- MA, J. S., G. F. SHAO, H. QIAN, J. Q. CHEN. 2000. www.metasequoia.org
- MERRILL, E. D. 1948a. A living *Metasequoia* in China. Science 107: 140.
- . 1948b. *Metasequoia*, another “living fossil.” Arnoldia 8(1): 1–8.
- METASEQUOIA CONSERVATION COMMITTEE. 1948. The report of *Metasequoia* Conservation Committee, Nanjing, China. (4 printed pages in Chinese.)
- MIKI, S. 1941. On the change of flora in Eastern Asia since Tertiary Period (I). The clay or lignite beds flora in Japan with special reference to the *Pinus trifolia* beds in Central Hondo. Jap. J. Bot. 11(3): 237–304.
- NELSON, E. C. 1998. *Metasequoia glyptostroboides*,

- dawn redwood: some Irish glosses on its discovery and introduction into cultivation. *Curtis's Bot. Mag.* 15: 77–80.
- PIZHOU SHUISHAN EDITORIAL GROUP. 1996. Pizhou shuishan. China Forest Press, Beijing, China. (In Chinese.)
- RAIZADA, M. B. 1948. A living fossil tree. *Indian Forester* 74: 208.
- SAITO, Y. 1995. *Metasequoia*. Chuo Koronsha, Tokyo, Japan. (In Japanese.)
- SATOH, K. 1999. *Metasequoia* travels the globe. *Arnoldia* 58(4) and 59(1): 72–75.
- SHAO, G. F., Q. J. LIU, H. QIAN, J. Q. CHEN, J. S. MA, AND Z. X. TAN. 2000. Zhan Wang (1911–2000). *Taxon* 49: 593–601.
- SHI, H. 1996. Dr. H. H. Hu's biography. Pages 851–890 in D. W. ZHANG, D. X. HU AND D. K. HU, eds., *Dr. H. H. Hu's Collections*. Jiangxi Normal University Press, Nanchang, Jiangxi, China. (In Chinese.)
- SILVERMAN, M. 1990. Search for the dawn redwoods. Published by author, San Francisco, California.
- SPONGBERG, S. A. 1990. *A Reunion of Trees*. Harv. Univ. Press, Cambridge.
- SZE, H. C. 1950. *Metasequoia*. Min Ben Press, Shanghai, China. (In Chinese.)
- TANG, G. G. 1987. A revision of “the *Metasequoia* flora and its phytogeographic significance.” *J. Nanjing Forest Univ.* 1: 88–104. (In Chinese, with English summary.)
- TSIANG, Y., AND P. T. LI. 1964. Diagnoses of new annonaceous plants from Hainan. *Acta Phytotax. Sin.* 9: 374–375.
- WANG, C. 1981. The famous star in the forest kingdom. Film review of *Metasequoia*. *Hubei For. Newsl.* 6: 33–34. (In Chinese.)
- WANG, G. Q. 1999. Discovery of and research on *Metasequoia*. Jiangxi High Education Press, Nanchang, Jiangxi, China. (In Chinese.)
- WANG, X. Q., AND B. X. GUO. 2002. Suggestions for the protection and study of *Metasequoia glyptostroboides*. *Hubei For. Sci. & Techn.* 1: 27–29. (In Chinese.)
- WANG, Z. (YI SHI). 1948. Before and after *Metasequoia's* discovery. *For. Newsl.* 4/5: 5–6. (In Chinese.)
- ZHANG, B. Y. 2000. The living fossil—*Metasequoia*. China Forest Press, Beijing, China. (In Chinese.)
- ZHANG, Y. 1981. W. C. Cheng explained the discovery of *Metasequoia*; a note recorded by the editor of *Plants* on 23 May 1981. (The original is deposited in the archives of *Plants* in Beijing; in Chinese.)