

Illustrations of
the New Camellia Hybrids
that Bloom Year-round

四季茶花杂交新品种 彩色图集

世界茶花育种的一大突破
A Great Breakthrough
in the World's Camellia Breeding



主 编 高继银 刘信凯 赵强民
Chief Editors Gao Jiyin Liu Xinkai Zhao Qiangmin



浙江科学技术出版社
ZHEJIANG SCIENCE AND TECHNOLOGY PUBLISHING HOUSE

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管开云

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have pioneered breeding year-round blooming camellia cultivars.

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Guang Kaiyun

PhD, Professor, Kunming Institute of Botany, Chinese Academy
of Sciences Vice President, International Camellia Society
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《四季茶花杂交新品种彩色图集》

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Profiles of major members in the committee



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Director of the editorial committee of the book, a professor, serves as Board Chairman of Palm Landscape Architecture Co., Ltd., a winner of Special Government Allowances of the State Council, expert on Flower Consultation of State Forestry Bureau, also serves as Vice President of Chinese Society of Landscape Architecture, president of Guangdong Association for Advancement of Industrial Technology Innovation for Ornamental Plants, visiting professor of Beijing Forestry University. He is committed to develop the landscape industry, such as the exploitation of plant resources, the introduction and domestication of garden plants and new variety protection, and is entitled as '2010 China Flowers Industry Person'.

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First chief editor of the book, a professor, has engaged in the genus Camellia for 50 years. After retired from Research Institute of Subtropical Forestry, CAF in 2005, he has been working on camellia breeding at the Palm Landscape Architecture Co., Ltd. He has obtained outstanding achievements on research of oil camellias, collection of camellia species, introduction of exotic camellia cultivars and breeding of new generation camellia varieties.

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Second chief editor of the book, a horticultural engineer, director of the Plant Research Institute of the Research and Development Department, Palm Landscape Architecture Co., Ltd. and a director of Camellia Branch, China Flower Association. He devotes chronically to the development and utilization of camellia resources and has a great contribution especially in the breeding, promotion and protection of new camellia varieties with four seasons blooming trait.

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Third chief editor of the book, an engineer, master, serves as the majordomo of the Department of Plant Research and Development in the Palm Landscape Architecture Co., Ltd. and a committee number of Ecological Conservation, Chinese Society of Landscape Architecture. He has been engaged in the work on the introduction and domestication, breeding and popularization of new-superior garden plants in long time. He has also made a greater contribution on the creation and development of new camellia varieties.

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中国茶花育种和广泛应用的春天到来了

世界上迄今已发现的山茶属种类超过 300 种, 中国占有 80% 以上。在中国北回归线两侧集中分布了山茶属的大量种类, 这里既是山茶属植物的现代分布中心, 也是它的起源中心。一些嗜热的种类由此向海南岛和中南半岛扩散, 共计不到 40 种。其中向越南扩散的种最多, 其次是南亚次大陆, 到达印度尼西亚和菲律宾的只有一个种, 即管蕊茶。从山茶属的起源中心也向东北方向扩散, 成为较耐寒的种, 如山茶 (*Camellia japonica* L.) 等 (5 ~ 6 种)。方文培教授认为, 山茶原生于中国四川而不是日本, 在古代, 山茶通过长江和京杭大运河的商船向东、向北并向海岸外的岛屿移栽。俞德浚教授更认为, 耐寒的山茶和其他山茶种类在中国的古代就已栽培, 分布在日本的山茶来自中国。中国川西金沙江上游河谷及峨眉山分布着大量的山茶, 它通过金沙江到长江水流的搬运, 到达长江出海口, 由海流转运至山东半岛和韩国济州岛定居, 最后到达日本的本洲、四国等岛屿。按俞教授的观点, 朝鲜半岛和日本的山茶是山茶自然分布区的扩大, 而不是人类有意识移植的结果, 尽管日本从公元 7 世纪就从温州、宁波移植栽培茶花。冯国楣教授同样认为山茶是中国的原生种。日本人对山茶原生于中国而不是日本很有意见。张宏达教授访问日本时, 曾受邀察看大可合抱的野生山茶, 他和俞德浚教授的意见相似, 认为山茶也可能分布至日本。美国学者弗雷泽在 20 世纪 80 年代初曾 3 次来到中国, 专门寻找原生的山茶。他经过调查后得出结论, 山茶的确原生于四川。他同时还根据其他人的调查, 确定在韩国西海岸一侧的大青岛、Ulung-do 都有山茶生长, 他认为这些岛屿正好处于古代中国与朝鲜、日本商船的航行线路上, 所以把中国原生的茶花引种到这些地方是很有可能 (引自 *The American Camellia Yearbook*, 1983: 114-116)。从地质史上看, 实际上日本列岛在白垩纪晚期, 即距今约 116.6 万年前才最终与亚洲大陆分开, 在此之前, 山茶属的许多种在亚洲大陆已经存在, 山茶分布至日本应是很自然的。现存中国子房秃裸的红山茶有山茶、张氏红山茶、连山红山茶、浙江红山茶、大果红山茶、莽山红山茶等, 山茶并非只是一个孤立的种。张氏红山茶 [引自 *Ecol. Sci.*, 28(5): 424-427] 种子曾有幸以它正确命名 *Camellia changii* Ye 搭乘“神舟七号”载人宇宙飞船遨游太空。

中国的茶花栽培至少有千余年的历史, 可分为华东山茶系列和滇山茶系列。除朝鲜和日本与中国近邻有地利之便, 很早就引种了中国的茶花外, 西方各国在 17 世纪和 18 世纪才引种中

国的茶花，他们不但引种栽培品种，也引种了野生种，如西南红山茶、怒江红山茶、尖萼红山茶、香港红山茶、玫瑰连蕊茶等。在积贫积弱的中国，直到新中国成立，累积育成的山茶系列品种仅 300 余个，滇山茶系列品种 100 余个，其中大部分品种是经由芽变选育而来的，而在国外至今育成的茶花品种已超过 15 000 种。改革开放后，中国的茶花事业获得了极大的发展。国力的增强，人民生活水平的提高，使人们对茶花育种的热情空前高涨。凭借着中国丰富的山茶属植物资源，特别是新近四季开花的张氏红山茶、四季花金花茶、花有芳香的任氏山茶等的陆续发现，使茶花育种有了新的更高的目标，如培育夏季开花的茶花，培育四季开花的重瓣茶花，培育观赏性状更佳的黄色茶花，培育花有芳香的茶花。这不仅带来了人们观念上的大转变，而且在付诸行动的短短三年就取得了石破天惊的效果。棕榈园林股份有限公司茶花育种团队以张氏红山茶、浙江红山茶、越南抱茎茶、红花瘤果茶以及现有的能育的茶花品种作为亲本，育成了 200 余个主要是杂交一代的品种，也有少数 F_2 代的品种，这可谓井喷式的育种。该团队育成的新品种有夏季开花的山茶、张氏红山茶的半重瓣品种、抗寒落叶的茶花品种以及用开红花的茶花品种‘媚丽’（Tama Beauty）作为亲本育成的黄花色的杂交种，这是了不起的成就。

当然，茶花育种要多头并举。由于山茶属植物在自然界存在着广泛的种内和种间杂交，以及各种因素作用下的自然变异，因此从芽变进行育种仍然是有用的。而建立在中国广泛的山茶遗传背景下的众多山茶属植物，经过人工主动选择作为亲本去进行杂交，能够加快茶花新品种选育的速度。中国巨大的山茶属基因库使中国茶花杂交育种具有很大的优势。茶花育种是一项长期的目标，不可能一蹴而就，急于求成不见得能取得更好的成果。获得杂交一代后尚不能泄气，还需要进行回交、自交、复交等工作，以提高茶花新品种的观赏性状、栽培性状和经济性状。只有这样，更多更好的茶花新品种才能如雨后春笋般涌现。

这是一本茶花育种实践和成果的记录，预示着中国茶花育种和广泛应用的春天已经到来了。

中山大学教授、博士生导师、山茶属植物分类专家

叶剑兴



Foreword One

The spring of camellia breeding and extensive use in China has arrived

Up to now, there are over 300 species of the genus *Camellia* that have been found worldwide, of which the species in China account for eighty percent. In China, most of the species of *Camellia* are distributed on both sides of the Tropic of Cancer where is not only a modern distribution center of the Genus *Camellia*, but also its center of origin. About less forty thermophilic species originated from these areas spread to Hainan and the Indo-China Peninsula, of them, mainly to Vietnam, and some regions in the subcontinent of South Asia. Only one species, *C. lanceolata*, reached Indonesia and Philippines. There are five or six species of the Genus *Camellia* that expanded northeastward from the center of origin and became hardy species. Professor Fang Wenpei believed that *C. japonica* in South Korea and Japan was originated in Sichuan and brought there by merchants through the Yangtze River and the Beijing-Hangzhou Grand Canal in ancient times. Professor Yü Tetsun also thought that the distribution of the Japanese *C. japonica* was the extension of the natural distribution area in Sichuan, China. Professor Yü believed that the seeds of *C. japonica* in the Western Sichuan were transported by the current of Jinsha River and Yangtze River, through the mouth of the Yangtze River to Shandong Peninsula and then to Jeju Island, South Korea and finally to the archipelago of Honshu, Shikoku etc of Japan. According to Professor Yü, the distributions of *C. japonica* in Korean Peninsula and Japan are the result of the natural distribution area expansion of *C. japonica* from China other than conscious transplantation of humans, even though camellias cultivars were introduced to Japan in the seventh century from Ningbo and Wenzhou in China. Professor Feng Guomei and Professor Chang Hungta agreed with the view held by Professor Yü when they were invited to see wild *C. japonica* during their visit in Japan. Harold A. Fraserd, an American, has come to China for three times in 1980s and looked for native *C. japonica* in China. According to his investigation and research, he concluded that *C. japonica* was native in Sichuan, China. Drawing on the investigation results of others, Harold A. Fraserd also pointed out that the *C. japonica* grew in Taechongdo and Ulung-do in Korea were brought by ancient Chinese merchants (Cited from *The American Camellia Yearbook*, 1983: 114-116). In fact, from the geological history, the islands of Japan were finally separated from the Asian continent in 1.16 million years ago in the late Cretaceous period. Before this, many species of *Camellia* already existed in the Asian continent, therefore it is natural that camellia is distributed in Japan. Existing ovaries bare red camellias in China include *C. japonica*, *C. changii*, *C. lienshanensis*, *C. chekiangoleosa*, *C. magnocarpa*, *C. mongshanica*, etc. The seeds of *Camellia changii* Ye [Cited from *Ecol. Sci.*, 28 (5): 424-427] had the privilege to travel to the outer space aboard the Shenzhou seven manned spaceship due to its correct name.

Camellias cultivation in China has at least a thousand years of history, and it can be divided into East-China camellias cultivars series (*C. japonica* cv.) and Yunnan camellias cultivars series (*C. reticulata* cv.). Due to the

geographic proximity to China, camellias were introduced to Korea and Japan, which was earlier than the western countries where the introduction of camellias from China began in the seventeenth and eighteenth century, including camellias cultivars and wild species such as *C. pitardii*, *C. saluenensis*, *C. edithae*, *C. hongkongensis*, *C. rosaeflora* and so on. Until the founding of New China there were more than 300 East-China camellias cultivars series bred and more than 100 *C. reticulata* cultivars series bred, of them, most of the cultivars were obtain from bud mutation, in sharp contrast with 15 thousand camellia cultivars bred abroad. However, after the reform and opening up of China, with the enhancement of national strength and the rise of living standard, people showed unprecedented enthusiasm to camellias breeding. With rich camellia plant resources in China, the appearance of *C. changii* and *C. perpetua* which blossom in four seasons, and *C. renshanxiangiae* with fragrant flowers made camellia breeding achieve new higher goals, such as the breeding of camellias blossoming in summer, double-flowered camellias blossoming in four seasons, golden camellias and fragrant camellias. The practice of camellias breeding has made great success. Camellia breeding team of the Palm Landscape Architecture Co., Ltd. has bred more than two hundred camellia cultivars hybridized from several cross parents such as *C. changii*, *C. chekiangoleosa*, *C. amplexicaulis* and *C. rubituberculata* in three years. Most of these hybrid progenies are F_1 generation and minority are F_2 generation. It is blowout breeding of camellias. The team has bred summer blossom camellias, semi-double cultivars from *C. changii*, deciduous and cold-resistant camellia cultivars and yellow flower hybrids bred with 'Tama Beauty' that flowers are red. This is a remarkable achievement.

Camellia breeding, of course, could proceed from a number of aspects. Because of the existence of a wide range of the Genus *Camellia* intraspecific and interspecific hybridization in nature and natural variations under the influence of various factors, people could use those variations and the traditional method of bud sport breeding is still very useful. There are numerous species of camellias which have rich genetic traits in China, and this could speed up camellia breeding to choose them as a parent to hybrid. The enormous gene pool of the Genus *Camellia* in China may provide huge preponderance for the breeding of camellias. Camellia breeding is a long-term goal that can not be accomplished at a single leap and being anxious for success can not achieve better results. After gaining hybrid F_1 generation, researchers should keep the passion to do the work in backcrossing, self-fertilization, repeatedly backcross in order to improve the ornamental traits, cultivation features and economic characters of the new cultivars of camellias. Therefore, more and better new cultivars of camellias will spring up like mushrooms.

This book is a record of practices and achievements of camellias breeding, and it shows that the spring of camellia breeding and extensive use in China has arrived.

Ye Chuang-xing

Ph D & Professor, Sun Yat-Sen University
Taxonomist on Genus *Camellia*

Foreword Two

Camellias set to provide summer sparkle

For hundreds of years, camellia lovers have relied on a small number of species from which they hybridized the many glorious blooms that beautify their gardens.

Camellia japonica has been the most productive camellia parent for gardens around the world, followed by *Camellia reticulata*, whose progeny spectacularly grace the gardens of the USA. and Australia. Hybridizers have also turned to *Camellia saluenensis* (which crossed with *C. japonica* has resulted in the *C. × williamsii* family of camellias), *C. pitardii*, *C. lutchuensis*, *C. oleifera* and *C. sasanqua*.

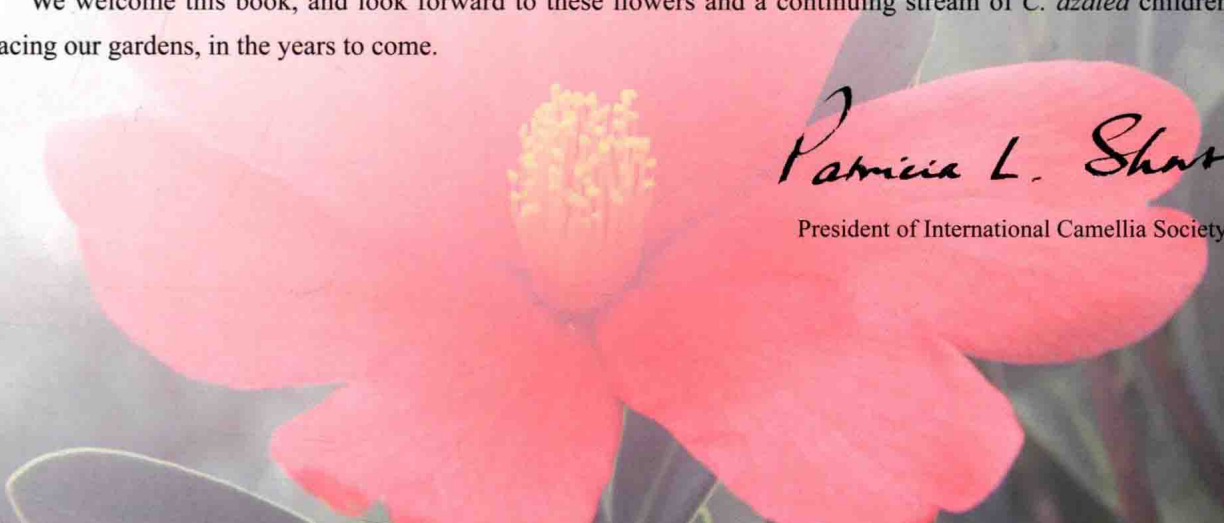
All those camellia species and their progeny share a common characteristic: a defined flowering season, usually ranging from early autumn to late spring. Camellia blooms have largely been absent from the garden in the summer.

In the past decade, however, hybridizers have gained access to a new camellia species—*Camellia changii*, also known as *Camellia azalea*, because of its leaves, reminiscent of the leaves of azaleas.

At first glance, the species is unpromising. The flower of the species *C. azalea* is, in my opinion, a somewhat unimpressive and disappointing bloom, although pretty enough, a coral-to-red single flower. And it is notoriously difficult to propagate. However, this species has one brilliant ‘selling’ point: it blooms, prolifically, in the summer!

Increasingly, the results of a hybridizing project of the Palm Landscape Architecture Co., Ltd., of Guangzhou, China, are showing the true value of *C. azalea*: the progeny from its seed and its pollen are spectacular. The plants bloom throughout the year, with the main blooming season the summer. Flowers range from simple singles to fully formal double blooms, with semi-double, anemone, and peony forms in between. Many are large and showy enough to be competition-worthy. And some are very fragrant. Colours range from coral red to warm pink. Early reports indicate, as well, that the plants are more resistant to cold temperatures than the parent, the native habitat of which is hot and humid Guangdong Province in southern China.

We welcome this book, and look forward to these flowers and a continuing stream of *C. azalea* children gracing our gardens, in the years to come.



Patricia L. Shaw

President of International Camellia Society

序二

茶花要为夏季增光添彩

数百年来，茶花爱好者们利用少数山茶物种杂交出许多五彩缤纷的茶花品种，用于美化自己的花园。

世界上园林利用最普遍的山茶植物当数红山茶类，其次是云南山茶类，它们装点着美国和澳大利亚的园林，非常壮观。与此同时，杂交育种者们也把目光转向了怒江红山茶（与红山茶杂交获得了威廉姆斯家系）、琉球连蕊茶、油茶以及茶梅，开始了杂交育种工作。

所有这些山茶物种及其品种的共同点是：都有一个固定的开花期，通常都是从秋初至春末开花。从园林上看，极度缺少夏季开花的茶花种类。

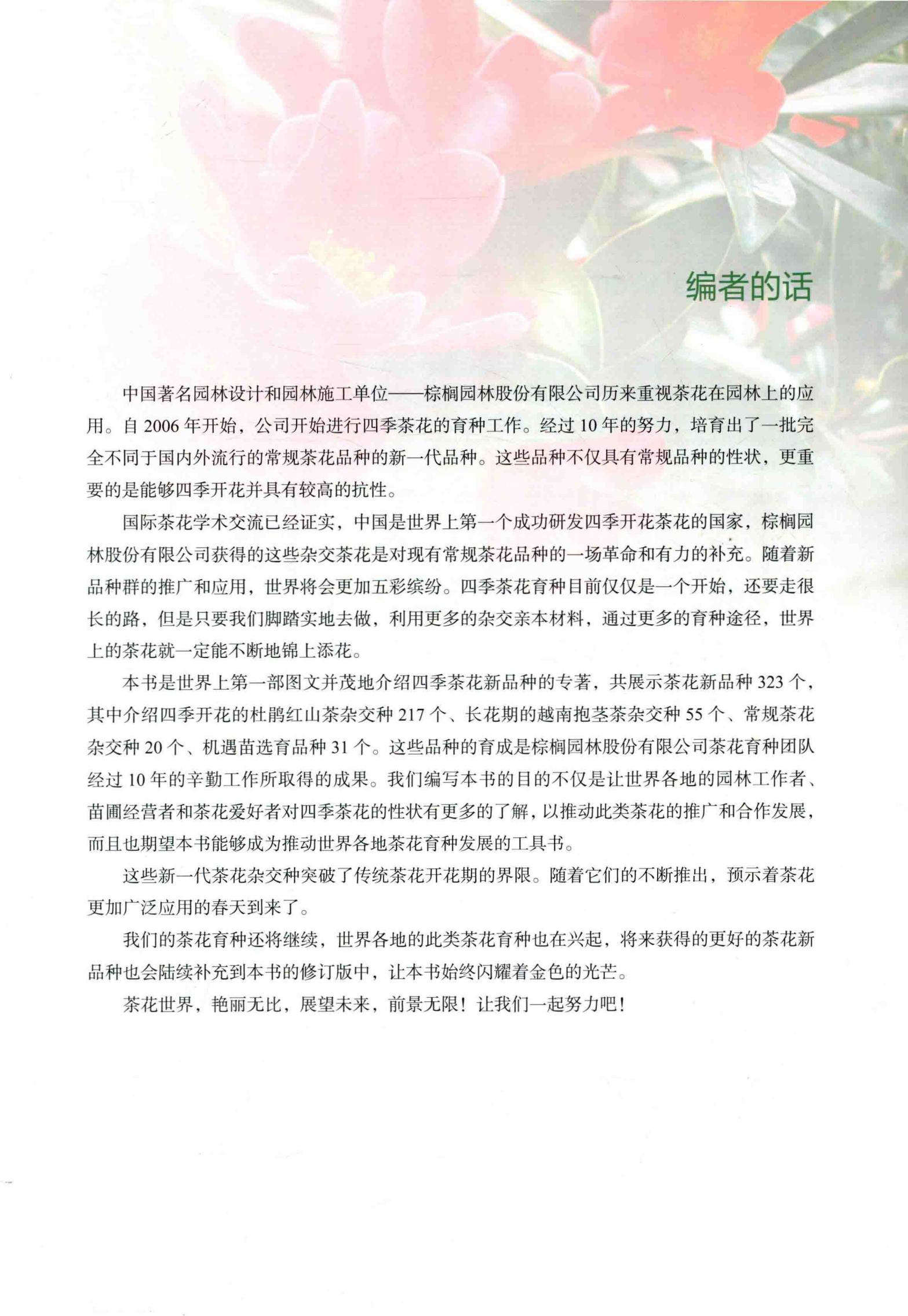
可喜的是，在过去十几年里，茶花育种者们获得了一个新的山茶物种——张氏红山茶，因为它的叶片会让人联想起杜鹃花的叶片，所以也被称为杜鹃红山茶。

乍看起来，杜鹃红山茶并不惊艳。在我看来，尽管杜鹃红山茶这个物种具有珊瑚红色至红色的单瓣花，已经很漂亮了，但它开花时还是让人觉得有点平淡无奇，甚至有些令人失望。除此以外，杜鹃红山茶繁殖困难也是出了名的。尽管存在以上问题，但这丝毫不掩盖杜鹃红山茶的耀眼光芒，它最闪亮的“卖”点在于：它在夏季盛花！

位于中国广东省的棕榈园林股份有限公司杂交育种项目的研究结果正越来越多地证实杜鹃红山茶的真实价值：杜鹃红山茶的实生后代和杂交后代都是令人称奇的；植株可全年开花，夏季盛花；花型范围由简单的单瓣型至完全重瓣型、半重瓣型、托桂型、牡丹型以及中间花型应有尽有；许多杂交种花朵大而艳丽，花色介于珊瑚红色至暖粉红色之间，足以与其他茶花媲美。更难得的是，有些杂交种还具有浓郁的芳香。早先的报道也指出，在抗寒性方面，杂交种比原产于炎热潮湿的中国南方广东省的杜鹃红山茶亲本要好得多。

我们热切期盼本书的出版，并期待在未来几年里，这些已经获得的和正在不断培育出来的杜鹃红山茶系列杂交品种能够应用到园林中，美化我们的花园。

国际茶花协会主席 帕特丽夏



编者的话

中国著名园林设计和园林施工单位——棕榈园林股份有限公司历来重视茶花在园林上的应用。自 2006 年开始，公司开始进行四季茶花的育种工作。经过 10 年的努力，培育出了一批完全不同于国内外流行的常规茶花品种的新一代品种。这些品种不仅具有常规品种的性状，更重要的是能够四季开花并具有较高的抗性。

国际茶花学术交流已经证实，中国是世界上第一个成功研发四季开花茶花的国家，棕榈园林股份有限公司获得的这些杂交茶花是对现有常规茶花品种的一场革命和有力的补充。随着新品种群的推广和应用，世界将会更加五彩缤纷。四季茶花育种目前仅仅是一个开始，还要走很长的路，但是只要我们脚踏实地去做，利用更多的杂交亲本材料，通过更多的育种途径，世界上的茶花就一定能不断地锦上添花。

本书是世界上第一部图文并茂地介绍四季茶花新品种的专著，共展示茶花新品种 323 个，其中介绍四季开花的杜鹃红山茶杂交种 217 个、长花期的越南抱茎茶杂交种 55 个、常规茶花杂交种 20 个、机遇苗选育品种 31 个。这些品种的育成是棕榈园林股份有限公司茶花育种团队经过 10 年的辛勤工作所取得的成果。我们编写本书的目的不仅是让世界各地的园林工作者、苗圃经营者和茶花爱好者对四季茶花的性状有更多的了解，以推动此类茶花的推广和合作发展，而且也期望本书能够成为推动世界各地茶花育种发展的工具书。

这些新一代茶花杂交种突破了传统茶花开花期的界限。随着它们的不断推出，预示着茶花更加广泛应用的春天到来了。

我们的茶花育种还将继续，世界各地的此类茶花育种也在兴起，将来获得的更好的茶花新品种也会陆续补充到本书的修订版中，让本书始终闪耀着金色的光芒。

茶花世界，艳丽无比，展望未来，前景无限！让我们一起努力吧！

Editors' Words

Palm Landscape Architecture Co., Ltd, a famous company focusing on landscape designation and construction, always pays great attention to landscape utilization of camellias. From 2006, the company started to do camellia breeding for getting new varieties with year-round blooming. After ten years' efforts, a series of new generation varieties, which are different from the ordinary ones that are popular in the world, were obtained. These varieties not only have the characteristics of ordinary camellias, but also can bloom continuously and resist environmental stress.

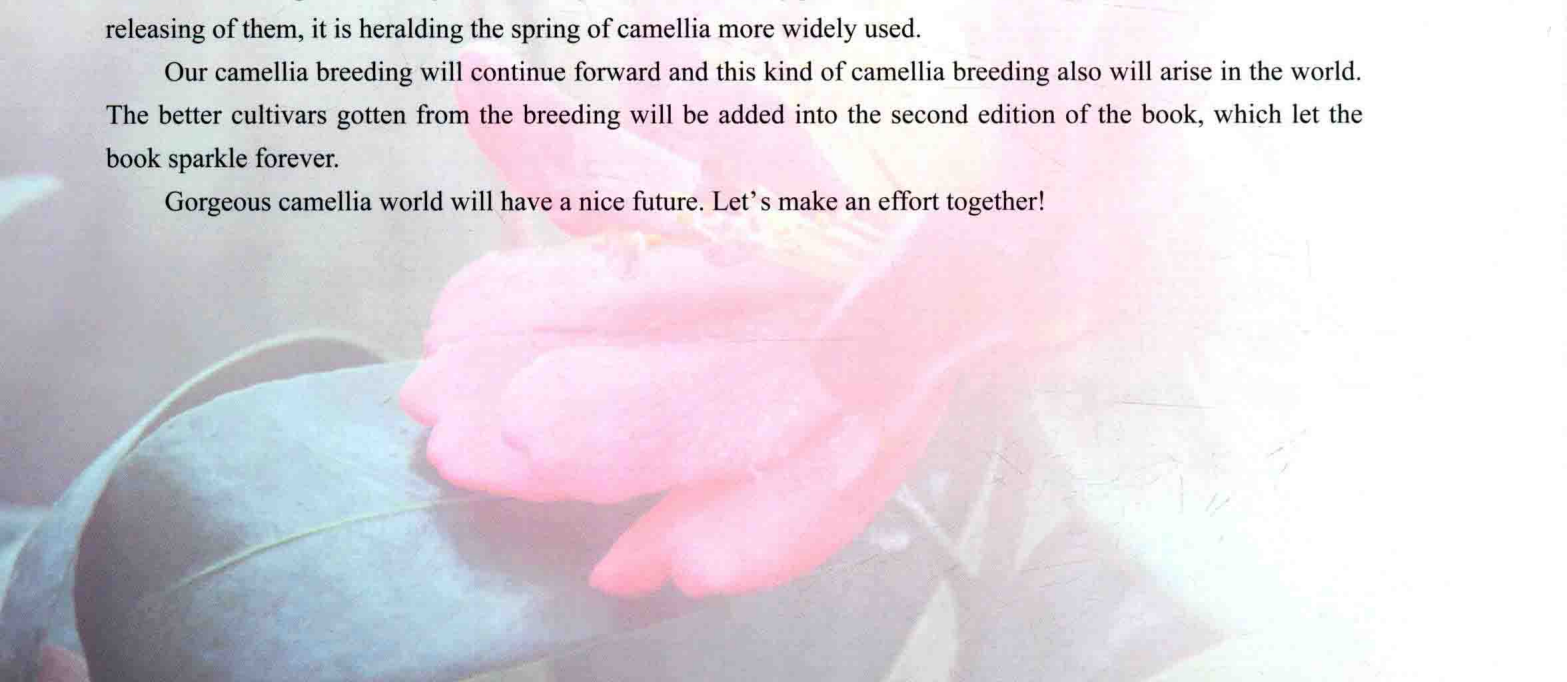
It has been proved by International Camellia Congresses that China is the first country to research and develop the camellias that bloom year-round successfully. These hybrids obtained by the company are a revolution and a strong supplement to the existing ordinary cultivars. With the popularization and utilization of the new hybrid group, the Camellia World will be more colorful. The breeding of year-round blooming camellias is just a beginning and there will be a long way to go. There must be more perfect camellias to be increased continuously in the world, as long as we intently carry out camellia crosses using more parent materials and more breeding methods.

This is the first well-illustrated monograph that introduces new camellia varieties with year-round blooming. The book shows 323 new camellia varieties in total, of them, 217 *C. azalea*'s hybrids with the year-round blooming trait, 55 *C. amplexicaulis*' hybrids with long blooming period, 20 ordinary camellia hybrids and 31 new varieties selected from camellia chance seedlings are introduced. These new varieties are the achievement obtained by the camellia breeding team at the Palm Landscape Architecture Co., Ltd., after industrious work for 10 years. Our aim is not only to make the worldwide gardeners, nurserymen, camellia enthusiasts understand more characteristics of the year-round blooming camellias, which promotes the development and cooperation of the camellias, but also hope it could be used as a reference book on camellia breeding worldwide.

These new generation hybrids are beyond the blooming periods of ordinary camellia. With the continually releasing of them, it is heralding the spring of camellia more widely used.

Our camellia breeding will continue forward and this kind of camellia breeding also will arise in the world. The better cultivars gotten from the breeding will be added into the second edition of the book, which let the book sparkle forever.

Gorgeous camellia world will have a nice future. Let's make an effort together!



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