【汉英对照】
The Wild Flowers in Huangshan

黄山野生花卉

李秾 编著

黄山为世界著名的风景旅游胜地，它以苍劲多姿的奇松、千姿百态的怪石、瞬息万变的云海等奇观闻名于世界。每年有无数中外游人慕名而来，人们在欣赏其自然风光的同时，自然会惊叹那多彩多姿、争奇斗艳的各类奇花异卉。不仅如此，它还是一座华东地区的植物资源宝库。虽然在过去近100年的时间里，中外专家学者对黄山的植物分类、分布和植物区系等做过大量的研究，提供了丰富的研究资料，但对黄山野生花卉的种类、花形大小、花的“瓣化”、花的色变及其分布状况等，尚未有文献记载，本书对这些问题做一些初步探讨。

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前　言

黄山为世界著名的风景旅游胜地，它以苍劲多姿的奇松、千姿百态的怪石、瞬息万变的云海等奇观闻名于世界。每年有无数中外游人慕名而来，人们在欣赏其自然风光的同时，自然会惊叹那多彩多姿、争奇斗艳的各类奇花异卉。不仅如此，它还是一座华东地区的植物资源宝库。早在1918—1920年，我国植物学家钟观光教授对黄山植物作了首次考察与采集，接着美国A.N.Steward等人也到黄山作过一次短期的考察与采集。20世纪30年代以后，我国很多著名的植物学家，如秦仁昌(1925)、钱崇澍(1927)、钟补求(1935)、刘慎谔(1936)、李寅恭(1936)，以及林镕、郑万钧、吴中伦等植物分类学家都来这里做过调查与采集。虽然在过去近100年的时间里，中外专家学者对黄山的植物分类、分布和植物区系等做过大量的研究，提供了丰富的研究资料，但对黄山野生花卉的种类、花形大小、花的“瓣化”、花的色变及其分布状况等，尚未有文献记载，本书对这些问题做一些初步探讨。

本书共收录了黄山地区的野生花卉150种（图片137种），对其中代表性强的15种乔木花卉、47种灌木花卉、33种草本花卉、12种藤本花卉、3种附生花卉，分别用中英文作了简要的形态特征介绍。园林专业、林学专业的学生和对植物有兴趣的人士可能会喜欢本书，本书将能帮助黄山旅游观光者对照图片和形态特征介绍，对某个花卉的种有些初步认识。

黄山气候瞬息万变，忽阴忽晴，时雨时雾，要拍摄一张很满意的花卉图片，确有困难，鉴于只能借教学实习的机会拍摄，受时间和空间制约，所以有些图片不能如愿，编者在此谨向读者

Foreword

Huangshan is a famous scenic and tourist spot in the world. It's celebrated for its grotesque pines, strange stones and phantasmagorical clouds. Every year millions of people from all over the world are attracted to this place. While people appreciate the beautiful natural scene, they can't help marveling at the abundant multifarious beautiful flowers all over the mountains. Furthermore, Huangshan is a plant resource mine of east China area. In 1918–1920, Chinese botanist, Prof. Zhong Guanguang has made the first investigation and collection of plants in Huangshan. In succession American expert A.N.Steward investigated in Huangshan for a short time. Since 1930's, many famous Chinese botanists such as Qin Renchang(1925), Qian Chongshu(1927), Zhong Buqiu(1935), Liu Shene(1936), Li Yingong(1936), Lin Rong, Zheng Wanjun and Wu Zhonglun have made investigation and collection in Huangshan. In the past 100 years, though Chinese and foreign experts have made a great deal of research on plant classification, destribution and system, there is no literature record of flower category, shape, petalody, color and distribution in Huangshan. The writer makes some primary research on the problem.

The book is indexed by 150 kinds of wild flowers of Huangshan (137 kinds of which have pictures).In the book it is briefly introduced in English and Chinese the morphological characteristics of 15 kinds of arbor flower,47 kinds of bush flower, 33 kinds of herbal flower,12 kinds of vine flower and 3 kinds of epiphytic flower on behalf of wild flowers of Huangshan. The garden, forestry, horticulture students and other people who are interested in plants may like this book. It will help the tourists to Huangshan to have some basic knowledge of the species of some flowers, with the help of the pictures and

深表歉意。

在编写过程中，有幸得到安徽农业大学傅玉兰教授和省林科所胡一民工程师提供的部分图片，省药学院王德群教授热心赠送了龙胆、细茎石斛、白及、黄山梅等数幅高山草本花卉图片，在此一并致以谢忱。特别感谢严文燕老师在繁忙中完成了英文的校对工作。

自然是多样性的，黄山更显突出，编者等虽曾赴黄山工作近20次，终因业务水平所限，书中遗缺和错误在所难免，欢迎指正。

编者

morphological presentations.

Because the climate in Huangshan varies from minute to minute, it is very difficult to take a very satisfactory flowers pictures.In view of the fact that the pictures are taken only during teaching and training opportunities,some pictures are unable to be satisfactory. I apologize to the readers for it.

In the writing process,Professor Fu Yulan of Anhui Agriculture University and engineer Hu Yimin of Forestry Research Institute of Anhui Province provided part of the pictures for me. Professor Wang Dequn of Anhui College of pharmacy presented several pictures of Alpine plants and flowers including Gentiana scabra,Dendrobium moniliforme, Bletilla striata, Kirengeshoma palmata. Thanks for their help. Special thanks to Ms. Yan Wenyan for completing all the proofreading work of English.

For nature's diversity in Huangshan,though the authors went to work in Huangshan for nearly 20 times, the regrets and mistakes can hardly be avoided in the book and your comments are highly valued and appreciated.

Compiler

目　录

Contents

1 黄山自然环境的基本情况

黄山位于安徽省南部，地理范围为东至黄狮党，西至小岭脚，北至二龙桥，南至汤口。境内群峰嵯峨，一般山峰高1 000米左右，中心光明顶位于北纬30°08′，东经118°09′，顶峰（莲花峰）海拔1 860米，如以汤口为基点，相对高度为1 460米。山体主要是侏罗纪粗粒花岗岩侵入体所组成，除中央的顶面尚残留着小块的原始准平原地貌外，周缘部分已被强烈地切割破碎，在诸多孤纵的峰群间镶嵌着蛛网般的深壑坞谷。

黄山属东南季风气候型，四季分明，水热条件优越，气候温暖。根据光明顶气象站20年的记录，年平均气温为7.9℃（见表一），极端最高气温为27.1℃，极端最低气温为-22℃。由于受海拔高度影响，山麓与山顶气温相差10℃左右。黄山的降水充沛，全年降水量为2 372.5毫米。雨量最多月份为4—8月，最少雨量在冬季（见表二），年平均湿度为76%左右。低云云海、地形云和辐射雾合计年平均为256天。山顶上部冬季降雪较早，最早可于10月上旬出现，全年无明显的旱季。

土壤的基本性质是山岭下部（南坡海拔1 150米以下，北坡海拔1 100米以下）为山地黄壤，成土母质主要是花岗岩风化体，也有发育于第四纪红土和千枚岩、石英砂岩，质地粗松，土质呈酸性反应。在山的上部海拔1 150~1 650米为山地黄棕壤，母岩为花岗岩

1 Natural condition of Huangshan

Huangshan locates in the south of Anhui Province, its geographical area is east to Huangshidang, west to Xiaolingjiao, north to Erlongqiao and south to Tangkou. There are many mountains in Huangshan area. On average these mountains are 1,000 m high. The central mountain, Guangmingding locates in 30° 08′ north latitude and 118° 09′ east longitude. The peak (Lianhuafeng) is 1,860 m altitude, if using Tangkou as basic point, its relative height is 1,460 m. All the mountains are made up of Jurassic coarse granite intrusions. Except for small part of original quasi Campagna landform left on the central top, ambient parts are strongly incised and cracked. Cobwebby gullies and valleys lie in the many peaks.

The weather of Huangshan is east-south monsoon climate . It has clear four seasons, good water and sunlight conditions. According to the recent 20 years' records of Guangmingding weather station, the average annual temperature is 7.9℃ (see Form 1), the extreme highest temperature is 27.1 ℃ , the extreme lowest temperature is −22 ℃. Under the influence of the altitude, the temperature of piedmont and peak has a discrepancy of about 10 ℃. The rainfall is plentiful, annual rainfall is 2,372. 5 mm. From April to August the rainfall is the most, while in winter it is the least (see Form 2). Average annual humidity is about 76%. On average low clouds, orographic cloud and radiation fog appear for 256 days annually. In winter it snows on the top of peak earlier, the earliest snowing time is the first ten days of October. There is no obvious dry season all year.

The bottom soil of the mountain (under 1,150 m of south slope, under 1,100 m of north slope)is upland yellow soil, mother rock mainly is granite mantlerock, laterite and phyllite, quartzite. The soil is coarse and loose and has acid reaction. The upside of the mountain

表一 黄山各月平均气温及平均最高(低)气温(℃)

月份 项目	1	2	3	4	5	6	7	8	9	10	11	12	年平均
平均气温	−3.0	−1.6	2.3	7.8	12.0	14.9	17.8	17.5	13.9	9.6	4.0	−0.9	7.9
平均最高气温	0.6	2.0	6.2	11.3	14.9	17.8	20.5	20.5	16.9	12.1	7.4	2.6	11.1
平均最低气温	−6.2	−4.8	−0.6	4.7	9.1	12.5	15.7	15.3	11.5	6.2	1.1	−4.0	5.1

表二 黄山各月平均降水量(毫米)及降水百分率(%)

月份 项目	1	2	3	4	5	6	7	8	9	10	11	12	全年
平均降水量	64.4	133.1	173.6	254.8	333.8	558.0	294.8	273.5	201.1	120.2	95.9	69.3	2372.5
降水百分率	3	6	7	11	14	15	12	12	12	5	4	3	100

残积——坡积物,含粗石英砂粒,土壤呈较强的酸性反应(pH 4.9~5.6);在海拔1 650~1 840米的山顶平台如光明顶、平天岗一带为山地草甸土,土壤呈强酸性反应(pH 4.7),此类土壤含水量较高,温度低,有机质分解缓慢,极不利于植物生长。

Form 1 Average Monthly Temperature and the Highest(Lowest) Temperature(℃) of Huangshan

month / content	1	2	3	4	5	6	7	8	9	10	11	12	annual mean
average monthly temperature (℃)	−3.0	−1.6	2.3	7.8	12.0	14.9	17.8	17.5	13.9	9.6	4.0	−0.9	7.9
average monthly highest temperature (℃)	0.6	2.0	6.2	11.3	14.9	17.8	20.5	20.5	16.9	12.1	7.4	2.6	11.1
average monthly lowest temperature (℃)	−6.2	−4.8	−0.6	4.7	9.1	12.5	15.7	15.3	11.5	6.2	1.1	−4.0	5.1

Form 2 Average Monthly Rainfall(mm) and Rainfall Percentage of Huangshan(%)

month / content	1	2	3	4	5	6	7	8	9	10	11	12	all the year around
average monthly rainfall	64.4	133.1	173.6	254.8	333.8	558.0	294.8	273.5	201.1	120.2	95.9	69.3	2,372.5
rainfall percentage	3	6	7	11	14	15	12	12	12	5	4	3	100

from 1,150 m altitude to 1,650 m altitude is upland yellow-brown soil, mother rock is granite eluvium—slope stored things. The soil includes coarse quartz grit and has strong acid reaction (pH 4.9-5.6). The soil of the top mountain from 1,650 m altitude to 1,840 m altitude such as Guangmingding and Pingtiangang is upland meadow soil. The soil has strong acid reaction (pH 4.7). This soil has much water, low temperature and slow organic matter decomposition, so it is not fit for plant growing.

2 黄山野生花卉及其分布

黄山的地理位置虽属中亚热带，但由于山体海拔高度的差异，山的下部为亚热带气候特征，山的上部为温带气候特征，从而可以看到各类森林植被中分布着不同类型的亚热带固有的野生花卉和带有温带色彩的野生花卉。亚热带的植被虽然仍以乔木树种为优势，但从观赏的角度出发，由于它们体形高大，花朵小，花的颜色又没有热带乔木那样艳丽以及花朵在花序排列方式上的奇特而逊色，因此，在黄山可供人们观赏的乔木花卉种类就不多了。据统计，黄山乔木类总计约260种，而具有较高观赏价值的乔木花卉仅约20种。

黄山森林植被内观赏植物分布的又一特点是林下灌木花卉和藤本花卉种类较为丰富，在近250种灌木中，具有较高观赏价值的约占26%；藤本约90种中，有较高观赏价值的约占23%。令人惊讶的是草本花卉（包括蕨类）处于很弱的地位，仅占7%左右，而且主要集中在兰科和百合科内。附生花卉在我国热带森林里称之为“空中花园”，是重要的花卉资源，然而黄山却很少存在。本文根据植物的花形，花的颜色，香味及果、叶的色泽，形态，风韵等方面综合考虑，选择其观赏价值较高的花卉并按其主要分布带分述如下。

在海拔500米以下的垦殖栽培区，由于森林遭受极大破坏，气温升高，年平均温度约18℃，年降水量低于1 500毫米，土壤呈酸性的山地黄壤。近20年随着黄山旅游业的兴起，群众多从事经商和旅游服务业，有些地方已成为抛荒地，使原来从事耕作的地方如今又恢复了灌丛。这里生长着一些较为耐旱的灌木花卉，如六月雪（*Serissa serissoides*）、映山红（*Rhododendron simsii*，图44）、满山红

2 The wild flowers in Huangshan and their distribution

The geographical place of Huangshan is middle subtropical, but because of the difference of the mountain latitude, the bottom of the mountain is characteristic of subtropical climate, the top of the mountain is temperate zone. So there are all kinds of subtropical wild flowers and some wild flowers growing in temperature zone in the forest vegetation of Huangshan. The subtropical vegetation is mainly arbor, but for the arbor has high shape, small flowers, not flamboyant colors and not fancy anthotaxy, it has less ornamental value than tropical arbor. Consequently there are little varieties of arbors for people to view in Huangshan. According to statistics there are about 260 species of arbors in Huangshan, but only about 20 species have high ornamental value.

The other characteristic of ornamentals in Huangshan forest is abundant varieties of frutescose flowers and liane flowers under trees. In about 250 species of frutexes there are 26% frutescose flowers with high ornamental value; in about 90 lianes there are 23% flowers with high ornamental value; it is surprising that there are only about 7% herbaceous flowers (including fern), and the herbaceous flowers are mainly orchidaceous and liliaceous. Adnascent flowers are named by "Air Garden" in Chinese tropical forest and are very important flower resources, but in Huangshan adnascent flower is infrequent. Taking the shape, color, aroma of flower, fruit and leaves into account, according to their distributive zone, the writer selects some flowers with high ornamental value for description as follows.

In the cultivation area below 500 m altitude, for the forest has

(*R. mariesii*, 图43)、白鹃梅(*Exochorda racemosa*, 图28)、胡颓子(*Elaeagnus pungens*, 图25)、金樱子(*Rosa laevigata*, 图48)、湖北蔷薇(*R. henryi*, 图50)、芫花(*Daphne genkwa*, 图23)、省沽油(*Staphylea bumalda*)、毛省沽油(*S. bumalda* var.*pulescens*)、锦鸡儿(*Caragana sinica*, 图21)、猬实(*Kolkwitzia amabilis*, 图34)、光叶粉花绣线菊(*Spiraea japonica* var. *fortunei*, 图55)、蓬藟(*Rubus hirsutus*, 图52)、刚毛荚蒾(*Viburnum setigerum*);藤本花卉主要有紫藤(*Wisteria sinensis*, 图108)、金银花(*Lonicera japonica*, 图102)、山木通(*Clematis finetiana*);草本花卉有萱草(*Hemerocallis flava*, 图80)、三脉紫菀(*Aster ageratoides*, 图63)、垂盆草(*Sedum sarmentosum*),在条件较好的疏林或灌木丛内有喜阴湿的春兰(*Cymbidium goeringii*, 图73)、蕙兰(*C.faberi*, 图72)、马蔺(*Iris lactea*, 图82)及虎耳草(*Saxifraga stolonifera*, 图93)等。

个别地方还有可与热带著名风景树凤凰木(*Delonix regia* Rof.)媲美的小乔木合欢(*Albizzia julibrissin*, 图2)、棠梨(*Pyrus betulaefolia*, 图13),灌木构骨冬青(*Ilex cornuta*, 图32)也常有分布。

海拔500~900米处,人为破坏较少,仍保持着以山毛榉科、樟科为主的常绿阔叶林,林内有少量的落叶树。这里的气候温暖,年平均温度15~17℃,林内湿度不大,年降水量约1 500毫米,林内和林缘灌木种类较多,观赏价值较高的有檵木(*Loropetalum chinense*, 图36)、旌节花(*Stachyurus chinensis*, 图56)、棣棠花(*Kerria japonica*, 图33)、闹羊花(*Rhododendron molle*, 图45)、马银花(*R. ovatum*, 图46)、映山红(*R.simsii*, 图44)、蝴蝶戏珠花(*Viburnum plicatum* f.*tomentosum*, 图59)、中华绣线菊(*Spiraea chinensis*)、中华蜡瓣花(*Corylopsis sinensis*, 图22)、白棠子树(*Callicarpa dichotoma*, 图20)、野山楂(*Crataegus cuneata*)、南天竹(*Nandina domestica*, 图39)、日本紫珠(*Callicarpa japonica*)、百两金(*Ardisia crispa*)、红凉

been destroyed heavily, annual average temperature is about 18 ℃, annual rainfall is below 1,500 mm, the soil is acid upland yellow soil. In recent 20 years, with the development of tourism industry in Huangshan, most people do business and tour service, some place has became abandoned lands, so some cultivated lands comeback to bosks and some drought-resistant frutescose flowers grow here, for instance, *Serissa serissoides*, *Rhododendron simsii* (Pho.44), *R. mariesii* (Pho.43), *Exochorda racemosa* (Pho.28), *Elaeagnus pungens* (Pho.25), *Rosa laevigata* (Pho. 48), *R.henryi* (Pho.50), *Daphne genkwa* (Pho.23), *Staphylea bumalda*, *S.bumalda* var. *pulescens*, *Caragana sinica* (Pho.21), *Kolkwitzia amabilis* (Pho.34), *Spiraea japonica* var. *fortunei* (Pho.55), *Rubus hirsutus* (Pho.52), *Viburnum setigerum*; liane flowers *Wisteria sinensis* (Pho.108), *Lonicera japonica* (Pho.102), *Clematis finetiana;* herbaceous flowers are *Hemerocallis flava* (Pho.80), *Aster ageratoides* (Pho.63), *Sedum sarmentosum*. In some loose trees or bosks with good condition there are dank *Cymbidium goeringii* (Pho.73), *C.faberi* (Pho.72), *Iris lactea* (Pho.82), *Saxifraga stolonifera* (Pho.93), etc.

In several places there are *Albizzia julibrissin* (Pho.2) which can compare beauty with the famous tropical scenic tree, *Delonix regia* Rof., *Pyrus betulaefolia* (Pho.13) and *Ilex cornuta* (Pho.32) are frequently distributed there.

In the area between the altitude of 500-900 m, forest has been destroyed slightly, so there are evergreen broadleaf trees of mainly Fagaceae and Lauraceae, and there is little deciduous trees also. The climate is warm, annual average temperature is about 15-17 ℃. The humidity is not high, annual rainfall is about 1,500 mm. In the forest and on the margin of the forest there are many kinds of