

林业科技英语选编

李景韩 冯锦民 选译注释
樊锄云 邵玉铮

中国林业出版社

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科技新书目

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中国林业出版社出版（北京朝内大街130号）

新华书店北京发行所发行 外文印刷厂印刷

850×1168毫米32开本 9印张 215千字

1985年8月第1版 1985年8月北京第1次印刷

印数 1—8,000册

统一书号 9046·1003 定价 2.25 元

前 言

许多农林院校的师生和农林科技工作者，在学过基础英语之后，迫切希望能尽早接触原著，进入专业阅读阶段，然又苦于进口图书有限；国内已出版的英语教材，因受教学大纲、课堂讲授和教学时数等制约，课文多是片段节录，或为适应教学需要，作过某些剪裁或修改，因而同原著的距离相去较远。

据此，我们特从近年出版的七种原文书刊中，分别选取了十个章节，包括科普作品、大学教材和学术论著等。除各篇的参考文献未收外，仅作个别删削，保持了原文的本来面目。然后辅以简要的注释，并提供参考译文，为读者能较快地熟悉专业科技英语架桥铺路，同时，也为高等林业院校的公共英语教学提供一点参考资料。

在翻译过程中，我们主要参阅了以下工具书：

1. 新英汉词典
2. 英汉农业科技词典
3. 英汉林业科技词典
4. 英汉林业词汇
5. 英汉木材工业词汇
6. 英拉汉植物名称(试用本)
7. 北美树木名称(中国林业科学研究院油印本)
8. 英汉土壤学词汇
9. 英中植物病理学名词

10. 真菌名词及名称

11. 病毒名称

12. 英汉环境保护科技词汇

13. 世界地名译名手册

本书译文中的度量衡均改用法定计量单位。书后附有度量衡对照表。

鉴于林业科学涉及面很广，各人的具体情况不同，本书未列词汇表；至于个别术语的翻译，也恐有不当之处，欢迎读者指正。

编 者

· 1983.1. 于北京林学院

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Tree Characters

A brief discussion of the structural and silvical characters, an understanding of which is necessary in identifying trees, is presented here to aid students without previous botanical training^①.

Definition of a tree. There is no clear-cut line of demarcation between a tree and a shrub, and it is often impossible to place a plant definitely in one group or the other. Frequently a species, treelike under favorable environmental conditions, will be shrublike over most of its range. In general, height, form, and diameter must be taken into account in determining the classification of a doubtful form^②. In this manual a tree is defined as a woody plant having one well-defined stem, a more or less definitely formed crown, a minimum height of fifteen to twenty feet, and a diameter of not less than two inches.

Terminology. While appearing cumbersome to the beginner, the use of technical terms in describing characters is often necessary for a concise, accurate description^③. These technical terms have been avoided wherever their omission did not impair meaning, and a glossary explaining such terms has been included. The student should familiarize himself with

the more commonly used terms early in his study of the trees.

Name. Most species of trees have been given one or many common names, which usually describe some character of the tree and are easily learned by students. Unfortunately, these common names have many limitations. Some are merely local, others apply to two or more entirely different species, and some apply to trees belonging to different genera. Because of this, while common names may be useful and convenient, it is essential that each species have a definite, individual name that can be accepted throughout the world and cannot be applied to any other species④.

Botanists and scientists as a whole have agreed that these scientific names should be in Latin, as this is a dead language and not subject to change⑤. Botanists have further agreed that the name of a tree should consist of three parts: (1) a generic name, which is capitalized, refers the species to the group to which it belongs; (2) a specific epithet, beginning with a small letter, refers to the single species; followed by (3) the full or abbreviated name of the authority or person first describing the plant. Thus, the scientific name of ponderosa pine is *Pinus ponderosa* Laws. When a variety of a species is recognized, the varietal name follows the specific name; in the case of Arizona pine (a southern variety of ponderosa pine) the scientific name is *Pinus ponderosa* var. *arizonica* (Engelm.) Shaw⑥. When the names of two authorities are given,

one appearing in parentheses, this indicates that the species was first described by the authority in the

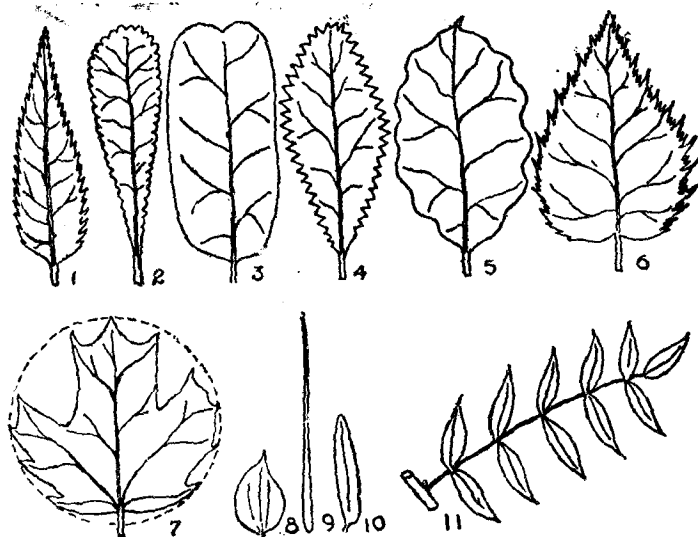


Fig. 1 LEAF PATTERNS.

Leaf Shapes

1. Lanceolate. 2. Oblanceolate. 3. Oblong. 4. Elliptic. 5. Oval.
6. Ovate. 7. Orbicular. 8. Scalelike. 9. Acicular. 10. Linear.

Leaf Margins

1. Serrate. 2. Crenate. 3. Entire. 4. Dentate. 5. Sinuate.
6. Doubly serrate. 7. Lobed.

Leaf Apices

1. Acuminate. 2. Rounded. 3. Emarginate. 4. Obtuse. 5. Mucronate.
6. Acute.

Leaf Bases

1. Obtuse. 2. Cuneate. 3. Rounded. 4. Acute. 5. Rounded. 6. Cordate.
7. Truncate.

Leaf Types

- 1 to 10. Simple leaves. 11. Pinnately compound leaf.

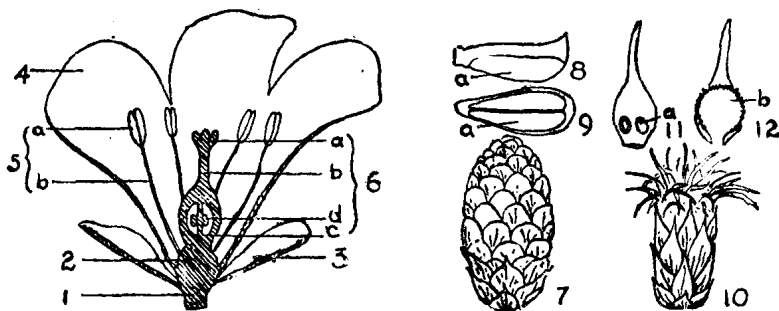


Fig.2 FLOWER STRUCTURE.

Perfect Flower Flowers of Pine

1. Peduncle. 2. Receptacle. 3. Sepal (Calyx). 4. Petal (Corolla). 5. Stamen, a-Anther, b-Filament. 6. Pistil, a-Stigma, b-Style, c-Ovary, d-Ovule. 7. Staminate conelet. 8. and 9. Stamen, or pollenbearing scale, showing side and lower surfaces. 10. Pistillate conelet. 11. and 12. Pistillate scale showing inner and outer surfaces respectively, a-Ovule, b-Bract.

parentheses, but in a different group of the same rank or in a different rank, and that the second author was the one effecting the change⁷. This is the case with the western hemlock, *Tsuga heterophylla* (Raf.) Sarg⁸.

Habit. This refers to the general appearance of a tree, usually as seen from a distance⁹. The size; appearance and form of the trunk; shape, density, and size of crown; and the number, size, and direction of growth of the branches are all factors helpful in distinguishing trees. In the conifers there is typically a trunk that extends to the top of the tree without dividing (*excurrent*), while most of the hardwoods have the trunk breaking up into several large branches (*deliquescent*). The crown and branches may vary greatly in

the same species, depending upon whether the tree is growing in the open or in a dense stand where it is shaded on the sides by its neighbors®.

Leaves. Since leaves display characteristic patterns, they are probably the most useful organs in identifying trees (Fig.1). Leaves consist of an expanded portion or *blade*, a supporting stalk or *petiole*, and small leaflike or scaly structures (*stipules*) attached in pairs at the base of the petiole. Leaves having no stipules are termed *estipulate*, and those without petioles are called *sessile*. Evergreen species can be identified by their leaves throughout the year, while species that shed their leaves annually (*deciduous*) must be identified by other characters during the winter months. Leaves may be arranged *alternately* (with one leaf attached to the twig at a certain point), *oppositely* (where two leaves emerge at opposite sides from the same place on a twig), *whorled* (where more than two leaves emerge from one point of the twig), or *fascicled* (where a number of leaves emerge in a cluster or bundle). They may be *simple* and consist of a single blade or

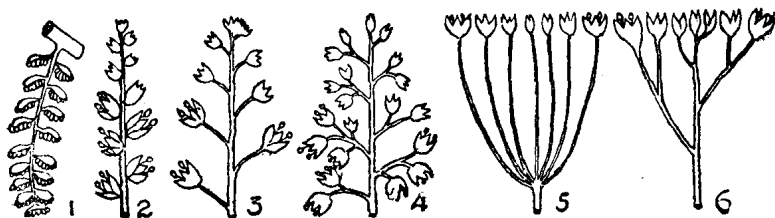


Fig. 3 TYPES OF INFLORESCENCES.

1. Ament. 2. Spike. 3. Raceme. 4. Panicle. 5. Umbel. 6. Corymb.

expanded portion, or *compound* and made up of several individual leaflets. If the leaflets in a compound leaf are arranged along each side of a common axis (*rachis*), the leaf is said to be *pinnately compound*. While if the leaflets all arise from the apex of the petiole, the leaf is termed *palmately compound*. Other characters used in identification are the shapes and types of margin, apex, and base. Texture, color, and surface, whether smooth or hairy, are also useful characters.

Flowers. All trees have flowers, although frequently they are small and inconspicuous. These are the reproductive organs by means of which the species is perpetuated. Floral characters are the most accurate means of identifying many trees (Fig. 2), although they are little used in the field because the period of bloom is so short. Flowers vary greatly in form, structure, and size. A *complete* flower (Fig. 2) is usually made up of leaflike *sepals* (*calyx*), often brightly colored *petals* (*corolla*), *stamens* (the male organs that bear the *pollen* in saclike *anthers*), and a *pistil* (the female organ consisting of a terminal *stigma* that catches the pollen, a *style*, and an *ovary*). The ovary may consist of one or more compartments (*cells*) and contain one to many *ovules* that later mature into seeds.

If the ovary is inserted on top of the other flower parts, it is *superior*, while if it appears below the origin of sepals, petals, and stamens, it is *inferior*. Flowers may be *perfect* (contain both stamens and pistil) or *imperfect* (contain one sex but not the other).

Plants having imperfect flowers are termed either *monoecious* (both sexes present in different flowers on the same plant) or *dioecious* (each sex borne on a different plant). When the only functioning sex organs in an imperfect flower are stamens, the flower is termed *staminate*; while one in which the pistil is the active organ is *pistillate*. Plants that bear some perfect and some imperfect flowers are termed *polygamous*. Flowers may appear singly or in clusters (*inflorescences*, Fig. 3). In Gymnosperms the pistil is replaced by a seed-bearing scale that does not enclose the seed.

Fruit. While varying greatly in type and appearance, fruits are very useful in identification. The di-

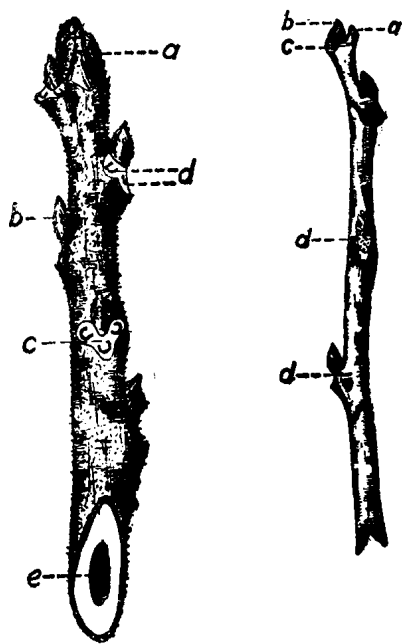


Fig.4 (Left) WINTER TWIG OF BLACK WALNUT. (a) terminal bud, (b) lateral bud, (c) leaf scar, (d) bundle scars, (e) pith.

(Right) WINTER TWIG OF RED MULBERRY.

(a) tip scar, (b) lateral bud, (c) leaf scar, (d) stipule scars.

fferent kinds of fruits are pictured and discussed in the text and defined in the glossary. The seeds included in the fruit contain the embryonic plant. To the layman these are generally of secondary utility in identification.

Twigs. The color, stoutness, central pith, or surface coverings and markings may be very useful in identifying trees, especially during the winter months (Fig. 4). As buds, stipules, and leaves fall off, they frequently leave characteristic scars on the twig^②. Buds are conspicuous on most twigs and helpful in identification. The shape, size, color, number of scales, arrangement, and the presence or absence of a terminal bud are important diagnostic characters.

Bark. The appearance of bark, while varying greatly with age and environment, is often a helpful character in identification. Color and thickness of the bark and whether it is furrowed, scaly, or smooth as well as its taste are commonly helpful features^③.

Wood. The character of the wood forms a separate means of identification that is more technical and difficult than the use of external characters. In this manual only the outstanding wood characters are given, such as the weight, color, and arrangement of large pores (whether *ring-porous* in a definite ringlike zone or *diffuse-porous* and scattered throughout the wood). A statement as to importance and use of the wood is also included^④.

Silvical characters. The tolerance, sites, associates,

reproduction, enemies, roots, life zones, and altitudinal distributions of species are often helpful in identification and have been included wherever possible^⑤.

In identifying trees it must be remembered that characters are variable and often overlap with those of closely related trees. Wherever possible, identification should not be based on a single character but on as many as are available.

注 释

1. an understanding of which...trees 是定语从句, 修饰名词 characters. 动词不定式短语 to aid... 为目的状语, 由 without 引出的介词短语, 作 students 的定语。
2. take (sth.) into account; 对……加以考虑。
3. while appearing...beginner 是现在分词短语, 作状语。while 在此句有让步的含意, 相当于 although, 可译为“虽然”, “尽管”。
4. while common names...; while 的用法, 参看注3. it is essential 为主句, it 是形式主语, that each species... 是主语从句, 而其中的 that can be... 则是修饰 name 的定语从句。
5. as a whole; 全部地, 就其整体来说。
6. in the case of...; 至于, 就……来说。
7. 复合句, 主句是 this indicates, 后接两个由 that 引导的宾语从句。when the names...in parentheses 是时间状语从句, 其中 one appearing in parentheses 是分词独立结构, 用作状语。
8. This is the case with... 是一个句型, 可译作: “……就是这样, 又如: That is often the case with him. 他往往就是这样。”
9. ...as seen from a distance 是 tree 的定语, 这种结构也可以看作是省略了某些成分的定语从句, as 是关系代词, 又如: The electrons, as shown (= which is shown) in Fig. 2, are extremely light. 电子是非常轻的, 如图 2 所示。
10. 由 whether 引导宾语从句, 作介词 upon 的宾语, 从句中含有一个

由 where 引导的定语从句, 修饰名词 stand。

11. to be... 是动词不定式短语, 作主语补足语。

12. fall off; 落下。

13. 本句中有三组 并列 主语: color and thickness of the bark 和从句 whether it is furrowed, scaly, or smooth 以及 its taste。

14. as to (或 for); 介词, 意为“至于”, “关于”。

15. wherever possible = wherever it is possible。

参考译文

树木的特征

识别树木必须了解树木的构造和生态特征, 在此对它们加以简要论述, 是为了对没有学过植物学的学生有所帮助。

乔木的定义。在乔木与灌木之间, 没有一条截然分明的界限, 因而, 常常很难断定某一植物究竟属于哪一类。常有这种情况: 有的树种在其主要分布区内为灌木, 而在环境条件良好时可长成乔木。一般说来, 在难以确定类别时, 应考虑其高度、形状和直径。在本手册中, 乔木是指木本植物, 它有一根明显的主干, 一个大致定形的树冠, 高度不低于 4.6—6.1m, 直径在 5.2cm 以上。

术语。使用技术术语虽然给初学者增加了负担, 但却是简明而准确地描述树木特征所必需的。在不影响理解时, 可以避免使用这些技术术语, 书后附有解释术语的词汇表。学生在开始学习识别树木时, 就应及早地使自己熟悉比较常用的术语。

名称。大多数树种都有一个或更多的俗名。这些名称常常说明了树木的某些特征, 很容易被学生记住。遗憾的是, 这些俗名有很大局限性。有些只是土名, 有些俗名用于两种或两种以上完全不同的树种, 甚至有的俗名还用于不同属的树木。因此, 尽管

俗名可能很有用，也很方便，但有必要给每一树种一个固定而独特的名称，这个名称既能为全世界所接受，又不能用于任何别的树种。

植物学家和科学家们一致同意用拉丁文命名，因为拉丁文是死的语言，不会再变化了。植物学家们进一步认为，每种树木的名称应包括三部分：（1）属名（第一个字母必须大写），把彼此近似的种合成一属的名称；（2）种加词（开头用小写字母），起着表示某一树木种的作用；（3）权威人士或该植物的第一个命名者的全名或缩写名，紧接在种加词之后。因此，美国黄松的学名就是 *Pinus ponderosa* Laws。当认定为变种时，应将变种名称加在种加词之后。就阿里佐纳松（美国黄松的南方变种）来说，其学名是：*Pinus ponderosa* var. *arizonica* (Engelm.) Shaw。当标出两位权威人士的名字时，其中一个放在括号内，表示某一树种首先由某权威定名，但他把该树种归入同属的不同种类或另外的属了，而第二位权威是改正该树种归属的人。西方铁杉 *Tsuga heterophylla* (Raf.) Sarg 就是这样。

树型。通常是指从远处望去树木的总的外形。树的大小，树干的外形，树冠的形状、密度和大小，树枝的多少、大小和生长方向等都是有助于识别树木的因素。在针叶林中，树干的特点是一直伸至树梢而不分杈（呈塔形），而大部分阔叶树都有分成若干大枝的树干（呈伞状）。同一树种的树冠和枝条会有很大差异，这取决于它是长在空旷地，还是长在周围有其他树木遮荫的密林中。

叶。由于叶子具有独特的形状，它可能是鉴别树木最有用的器官（图1）。叶子是由叶片（展开的部分），叶柄（支撑叶片的梗）和托叶（成对着生在叶柄基部的叶状或鳞片状组织）组成的。没有托叶的叶称为无托叶，而没有叶柄的叶称为无柄叶。在任何季节，都可根据叶子来鉴别常绿树种。而在冬季，则只有依据其