

朗文英汉图解科学词典

LONGMAN ILLUSTRATED
SCIENCE DICTIONARY
WITH CHINESE TRANSLATION



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朗文英汉图解科学词典

亚塞高德迈 (ARTHUR GODMAN) 编

颜鹏飞 (EDWARD YEN) 译

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(简化字本)

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本词典的用法 How to use the dictionary

The dictionary contains over 1500 basic scientific words divided into three main groups: physics, chemistry and biology. Some words may appear in two of the groups, e.g. motor¹ in physics, motor² in biology. Related words from other areas of science are also included: the physics part contains words from meteorology, chemistry contains words from geology and health and hygiene are found in biology. In addition the entries are arranged within the three main groups according to meaning, to help the reader to obtain a broad understanding of a particular area of science.

The main groups are further divided into subjects and parts of subjects. At the top of each page the subject is shown in bold type and the part of the subject in lighter type, for example on pages 118 and 119:

118 · CHEMICAL REACTIONS/ACIDS, BASES, SALTS

GEOLOGY/MINERALS · 119

本词典载有1500多个基本的科学单词，共归纳为三大类——物理学、化学与生物学。其中有若干单词可同时列入两类之中，例如motor一字，既可列入物理学，亦可列入生物学（分别记作为motor¹与motor²）。其他科学范围内的有关单词亦有收集本书之内者；在物理学部份中，载有气象学的名词；在化学部份中，载有地质学的名词；在生物学中，载有保健卫生等名词。再者，本书内的名词乃按照其意义而分类，旨在使读者对于科学中某一特殊领域能获得广泛的知识。

上述的每一类别再分成科目，而每一科目又再分成段落。在每一页的上端皆印有科目与段落的名称，前者的字体较粗于后者，例如：

118 · 化学反应/酸、碱、盐

地质学/矿物 · 119

1. To find the meaning of a word 查明单词的意义

Look for the word in the alphabetical index at the end of the book, then turn to the page number listed.

The description of the word may contain some words with arrows in brackets after them. This is an indication that these words with arrows are defined nearby, and looking at that word may help in understanding the word being looked up:

(↑) the word appears above or on the opposite page

(↓) the word appears below or on the opposite page

(p.21) the word appears on page 21

先于本书末尾的英文字母索引中，找出所欲查的单词，然后翻到该单词旁注明的页数。

在所查单词的解释中，如果遇到其他单词后面附有括弧与箭头，此表明其他单词的定义即在箭头所指的近处；参阅该定义有助于阐明原欲查得之单词的意义。

(↑) 该单词见本页上面或对面页上。

(↓) 该单词见本页下面或对面页上。

(第21页) 该单词见第21页。

2. To find related words 查阅有关单词

Look for the word you are starting from in the index and turn to the page number shown. Because this dictionary is arranged by ideas, all the related words are found in a set on that or the opposite page. The illustrations will also help, as it is often difficult to give a clear description using only words.

For example, the important reproductive parts of a flower are all defined on page 211. They include *stamen*, *anther*, *stigma*, *style*, *ovary*, and *carpel*. *Pollen* and *pollination* are also described on that page, as are all the words necessary to understand pollination.

在索引中查得单词，然后翻到该单词后所注明之页数，由于本词典乃按照意义编排，故所有有关单词皆聚集于同一页或对面一页上。因为仅藉文字往往不足解释清楚，故配以插图藉助阐明词义。

例如：花的重要生殖部份，如「雄蕊」、「花药」、「柱头」、「花柱」、「子房」与「心皮」，其定义皆载于第211页上；又例如「花粉」与「传粉」，以及理解「传粉」的必要单词，皆于同一页上予以说明。

3. To revise a subject 复习科目

There are two methods. Firstly, you may wish to see if you know all the words used in that subject. Secondly, you may wish to revise your knowledge of a subject.

- (a) To revise the words used in the subject of *chemical solutions*. Look up 'SOLUTION' in the alphabetical index. Turn to the page indicated, page 89. There you find the following words: *dissolve, solution, solute, solvent, saturated, unsaturated*.

Turn over to page 90, and you will find more words of related meaning to 'SOLUTION'. They are: *insoluble, solubility, concentration, dilute*. On page 91 you will see the words: *miscible, immiscible, separate, precipitation*.

All these words are relevant when you wish to write about *chemical solutions*.

- (b) To revise your knowledge about a subject, for example *winds*. The only word that you can remember well is 'SEA-BREEZE'.
- (i) Look up the alphabetical index and find 'SEA-BREEZE'. The page reference is 46.
- (ii) Now turn to page 46. There you will find the words: *thermal, sea-breeze, land-breeze, trade wind, monsoon*.

The different kinds of winds are described. The explanation of each kind of wind depends on knowing the cause of a *thermal*, the first word on the list. After understanding this word, helped by a diagram, the other words become easier to understand. On looking at page 47 these words are seen: *whirlwind, typhoon, wind scale, cloud, cirrus, cumulus, nimbus, stratus*.

These words complete the subject of *winds*, and then follows information about *clouds*. So, by using pages 46 and 47, the subject of *winds* can be revised and made clearer still by referring to the illustrations.

方法有两种：第一、试求掌握该科目中所用的一切名词；第二、重温有关该科目的知识。

(a) 如欲复习化学溶液科目中所用的名词，先于字母索引中查得 solution (溶液) 一词，然后按注明的页数，翻到第89页。在该页中可见到「溶解」、「溶液」、「溶质」、「溶剂」、「饱和的」、「不饱和的」。翻到第90页，则可见到更多有关「溶液」的名词，即「难溶解的」、「溶解性或溶解度」、「浓缩或浓缩度」、「稀释」；在第91页中，还有一些名词，即「易混和的」、「难混和的」、「分离」、「沉淀」。

于撰写有关化学溶液时，以上所有单词皆为有关的名词。

(b) 如欲重温某一科目，例如关于「风」的知识，最易联想到的名词为「海风」。

(i) 在字母索引中，可以查到在第46页上有 sea-breeze (海风) 此词。

(ii) 翻到第46页，则可以在该页上见到「上升暖气流」、「海风」、「陆风」、「贸易风」、「季风」等词，并且对于各种不同的风都有描述。如果要了解每一种风的说明，则必须懂得「上升暖气流」(上列名词中的第一个名词)的起因。于阅读说明并参照附图，从而明了此名词的意义后，则其余名词皆较易明了。如果翻到第47页，可以在该页上见到「旋风」、「台风」、「风级」、「云」、「卷云」、「积云」、「雨云」、「层云」等词。

以上有关「风」的名词对于复习该一科目已足够用，随之即可复习有关于「云」的知识。藉阅读第46与第47页，不仅可以复习「风」的知识，而且可以对照插图获得更明确的概念。

4. To find a word to fit a required meaning 寻找适当名词，以表达意义

It is almost impossible to find a word to fit a meaning in most dictionaries. It is easy with this book. For example, if you have forgotten the name of the part of the eye that is receptive to light, all you have to do is find the page reference for eye in the index and turn to that page. There is a diagram of the eye so you can see the relation of the parts, and the parts of the eye are described there, as well. You can then pick out *retina* from the others.

在多数的字典中，要查得适当名词以表达意义，乃几乎不可能的事，但在本书中则易查得。譬如，若忘记了眼睛感光部份的名称，只需在索引中查得「眼」字所在的页数，然后翻到该页。在该页上有插图表示眼睛各部份的关系，并有对各部份的描述，故「视网膜」一词在各名称中一查即得。

科学上有用的资料 Useful information in science

THE SI (SYSTEME INTERNATIONAL) UNITS SI (国际制度) 单位

PREFIXES 前缀

PREFIX 前缀	FACTOR 系数	SIGN 记号	PREFIX 前缀	FACTOR 系数	SIGN 记号
milli- 毫	$\times 10^{-3}$	m	kilo- 千	$\times 10^3$	k
micro- 微	$\times 10^{-6}$	μ	mega- 兆	$\times 10^6$	M
nano- 纤	$\times 10^{-9}$	n	giga- 京	$\times 10^9$	G
pico- 微微	$\times 10^{-12}$	p	tera- 垓	$\times 10^{12}$	T

BASIC UNITS 基本单位

UNIT 单位	SYMBOL 符号	MEASUREMENT 测量
metre 米	m	length 长度
kilogramme 千克	kg	mass 质量
second 秒	s	time 时间
ampere 安培	A	electric current 电流
kelvin 绝对温度	K	temperature 温度
mole 摩尔	mol	amount of substance 物质的数量

DERIVED UNITS 导出单位

UNIT 单位	SYMBOL 符号	MEASUREMENT 测量
newton 牛顿	N	force 力
joule 焦耳	J	energy, work 能、功
hertz 赫兹	Hz	frequency 频率
pascal 帕斯卡	Pa	pressure 压强
coulomb 库伦	C	quantity of electric charge 电荷量
volt 伏特	V	electrical potential 电势
ohm 欧姆	Ω	electrical resistance 电阻

COMMON ABBREVIATIONS 常用缩写

a.c.	alternating current	交流电
b.p.	boiling point	沸点
d.c.	direct current	直流电
e.m.f.	electromotive force	电动势
f.p.	freezing point	冰点
i.r.	infra red	红外线
m.p.	melting point	熔点
p.d.	potential difference	势差
r.h.	relative humidity	相对湿度
s.t.p.	standard temperature and pressure	标准温度与压强
u.v.	ultra violet	紫外线
v.p.	vapour pressure	蒸气压

COMMON CONSTANTS 常用恒量

s.t.p. standard temperature and pressure, expressed as 1.00 atm 标准温度与压强·表示为1.00atm 或760毫米水银柱高
or 760 mm Hg or 101 kPa (= kNm⁻²) (Pa = pascal) 或101 k Pa (= k Nm⁻²) (Pa = pascal)

Standard volume of a mole of gas at s.t.p., (在s.t.p.的每摩尔气体的标准体积) 22.4 dm³

The Faraday constant, (法拉第恒量) F , 96 500 C mol⁻¹

The Avogadro constant, (亚佛加德罗恒量) L , 6.02×10^{23} mol⁻¹

Speed of light, (光速) c , 3.00×10^8 ms⁻¹

1 calorie (卡路里) = 4.18 J

Specific heat capacity of water, (水的比热容量) 4.18 Jg⁻¹ K⁻¹

$\pi = \frac{22}{7}$ or 3.1416 $\pi = \frac{22}{7}$ 或3.1416

Speed of sound in air, (空气中的声速) 3.3×10^2 ms⁻¹

Acceleration due to gravity, (重力加速度) G , 9.81 ms⁻²

MATHEMATICAL SYMBOLS 数学符号

≡	identically equal to	全等
≈	approximately equal to	近似
∝	varies directly as	成正比
∞	infinity	无穷大
ab, a·b, a × b	a multiplied by b	a 乘以 b
a/b, $\frac{a}{b}$, ab ⁻¹	a divided by b	a 除以 b
sine (sin)	these are ratios which measure angles; they can be read from tables of angles	正弦(sin)
cosine (cos)		余弦(cos)
tangent (tan)		正切(tan)

这些是测量角度的比值, 可在角度表中查得。

Physics

物 理 学

PROPERTIES OF MATTER	物质的属性	10-36
HEAT	热	37-45
METEOROLOGY	气象学	46-51
LIGHT	光	52-61
ASTRONOMY	天文学	62-63
SOUND	声	64-68
MAGNETISM	磁	69-70
ELECTROSTATICS	静电学	71
CURRENT ELECTRICITY	电流	72-82
RADIATION	辐射	83-84
ELECTRONICS	电子学	85-86

device (*n*) an object made for a special purpose to help us in our work.

tool (*n*) a device which is used with our hands to make furniture, machines, to build houses, to dig the ground.

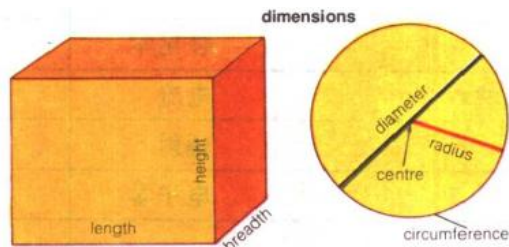
instrument (*n*) a device which is used to do skilful work, or to measure accurately (↓).

dimension (*n*) the dimensions of a solid are its length, its breadth, and its height. Liquids and gases do not have dimensions. A solid has three dimensions; a flat surface has two dimensions (length and breadth) and a line has one dimension (length).

circumference (*n*) the line which forms a circle or is the limit of any area.

radius (*n*) the distance between the centre of a circle and its circumference or the centre of a sphere and its surface, see *diagram*.

diameter (*n*) a straight line passing from side to side through the centre of a circle or sphere, or the length of that line.



volume (*n*) the amount of space taken up by an object in three dimensions.

measurement (*n*) the result of measuring or the action of measuring, e.g. (1) if a rope is measured and it is 2.5 m long, then its measurement is 2.5 m; (2) a ruler was used for the measurement of the rope.

accurate (*adj*) describes a measurement that is free from mistakes, e.g. using one instrument, an object's length is 26 mm. Using another instrument, the object's length is 26.2 mm; this is a more accurate measurement. **accuracy** (*n*).

器具(名) 为特殊用途而制造以助工作之物件。

工具(名) 用手操作以制造家具(家具)、机器、建屋或掘地之器具。

仪器(名) 用以做技巧工作或准确测量之器具。

空间量度、度(名) 一个固体有三度,即长度、宽度和高度。液体与气体无空间量度;固体有三度;平面有两度(长度和宽度);一条线只有一个度(长度)。

圆周(名) 一条围成圆圈的线,或任何面积之界限。

半径(名) 由圆心至圆周或由球心至其表面之距离。见图。

直径(名) 通过圆心或球心,而两端止于圆周或球面上之直线或此线的长度。

体积(名) 具有长、宽、高三度之物体所占的空间。

量度(名) 测量动作或测量所得的结果。例如(1)量度一条绳,其长为2.5米,则绳的量度为2.5米。(2)这条绳的长度是用直尺量得的。

准确(形) 形容无误差之量度,例如使用一具仪器量得一个物体之长度为26毫米,使用另一仪器量得该物体之长度为26.2毫米,则此乃较准确之量度。准确性、准确度(名)。



devices

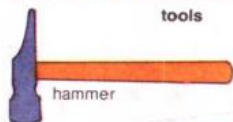
clock



telephone



compass



tools

hammer



spanner



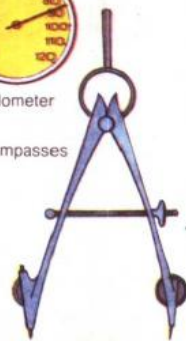
screwdriver

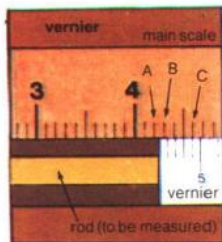


instruments

speedometer

compasses





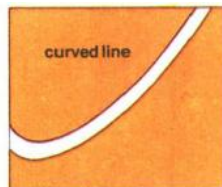
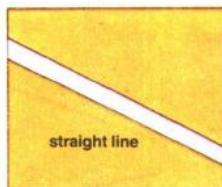
The 0 mark of the vernier is between lines A and B. At C a unit of the main scale meets the unit 4 of the vernier scale exactly showing that the rod is 4.24 cm or 42.4 mm.

scale (*n*) a set of marks, with numbers, rising from a low value to a high value.

vernier (*n*) part of an instrument used for measuring accurately, e.g. length to 0.1 mm. The vernier moves along a main scale. In the diagram the vernier reads 4.24 cm or 42.4 mm.

travel (*v*) to go from one place to another place; to go along a path, e.g. the Earth travels round the sun; a motor-car travels from one town to another town.

motion (*n*) movement; the action of travelling; going from one place to another place, e.g. the Earth is in motion round the sun; a motor-car is in motion when it is travelling. Motion is either in a straight line or in a curved line.



speed (*n*) the distance travelled divided by the time taken to travel the distance. If a motor-car travels 35 km in half an hour, its speed is 70 km per hour. The motion of the motor-car can be along a straight line or along a curved line.

velocity (*n*) speed in a certain direction. A motor-car travelling along a straight road with a speed of 70 km/hour also has a velocity of 70 km/hour. A motor-car travelling at 70 km/hour round a bend in a road has a velocity that is continuously changing as the road is not in a straight line.

标度(名) 一系列具有数字注明自低至高之数值。

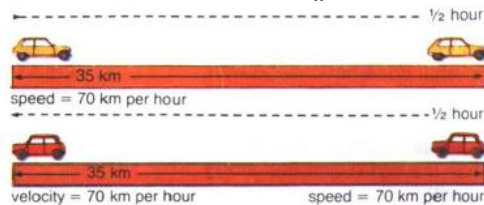
游尺(名) 为准确量度用之仪器的一部分,例如度量长度可精确到0.1毫米。游尺沿主要标度移动。图中游尺之读数为4.24厘米或42.4毫米。

行走、运行(动) 由一处行至另一处;沿一条径道前进,例如地球绕着太阳运行;汽车由一城镇走至另一城镇。

移动、运动、运行(名) 行走之动作。由一处行至另一处,例如地球绕太阳之运行;汽车上行走时之移动。移动(或运动)可以是沿着直线的,或沿着曲线的。

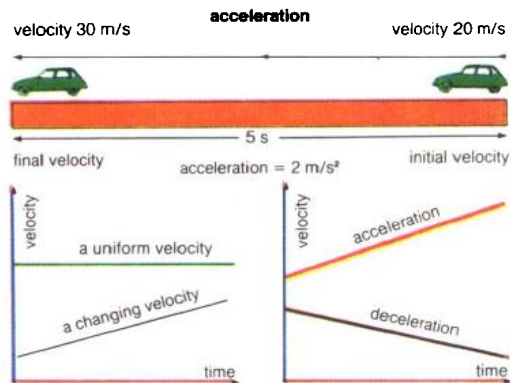
速度、速率(名) 行走的路程除以行走该路程所需的时间。如果一辆汽车于半小时内可以行走35千米,其速度为每小时70千米。汽车的运动可沿着直线,亦可沿着曲线。

速度(矢量的)(名) 有一定方向的速度。以每小时70千米的速度,沿一条直路行走的汽车,其矢量速度亦为每小时70千米。如果一辆以每小时70千米的速度绕着一条弯路行走,其矢量速度是在不断变化的,因为该道路不是一条直线。



acceleration (*n*) the increase in velocity per unit time, i.e. the increase in velocity divided by the time taken to increase it. If the velocity of a motor-car increases from 20 metres per second (m/s) to 30 m/s in 5 seconds, then the acceleration = (increase in velocity) ÷ (time) = $(30 - 20) \text{ m/s} \div 5 \text{ s} = 10 \text{ m/s} \div 5 \text{ s} = 2 \text{ m/s}^2$ (metres per second per second) **accelerator** (*n*), **accelerate** (*v*), **accelerated**, **accelerating** (*adj*).

加速度(名) 每单位时间所增加的速度, 即增加的速度除以增加所需费的时间。假若一辆汽车的速度于5秒钟内由每秒20米增加到每秒30米, 则加速度 = (增加的速度) ÷ (时间) = $(30 + 20) \text{ 米/秒} \div 5 \text{ 秒} = 10 \text{ 米/秒} \div 5 \text{ 秒} = 2 \text{ 米/秒}^2$ 每秒每秒米)。 **加速器**(名); **加速**(动); **已加速的**(形); **正在加速**(形)。



deceleration (*n*) the rate of decrease in velocity. Deceleration is negative acceleration.

decelerate (*v*).

rest (*n*) a state of not being in motion, e.g. a motor-car is either at rest, or it is travelling (in motion).

initial (*adj*) describes a speed, a velocity, an acceleration, or any measurement that is the first to be considered, e.g. the initial length of a spring is 10 cm. The spring is stretched and its final length is 12 cm.

uniform (*adj*) describes a speed, or a velocity, or an acceleration, that does not change with time; or also any shape, or colour, or appearance, or measurement that is the same over the whole of an object, e.g. a water-pipe of uniform diameter (p.10) has the same diameter along the whole of its length.

减速度(名) 速度减少率。减速度即负加速度。 **减速**(动)。

静止(名) 不移动的状态, 例如一辆汽车, 若不是在静止之中, 则必定在行走(或正在移动之中)。

最初的(形) 形容开始的速度、矢量速度、加速度或其他任何量度, 例如图中弹簧的最初长度为10厘米, 于拉直时, 其最终长度为12厘米。

均匀的(形) 形容非随时间而变的速度, 或矢量速度、或加速度, 亦可形容形状、或颜色或外貌或量度全部一样的物体。例如: 直径均匀的水管(第10页)从一端到另一端都有同样大小的直径。

