

科技英语阅读与翻译 实用教程

翟天利 主编 赖瑜 刘颖 副主编

新 时 代 出 版 社

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前 言

大学英语教学是一项系统工程。高等院校理工科本科《大学英语教学大纲》中规定,大学英语教学应在两年的基础训练阶段之后,在第五至第七学期开设必修的专业英语阅读课程。

但是专业英语阅读阶段的教学远未得到应有的重视,人们更多关注的是大学英语四、六级测试成绩。外语学习如果是为了等级考试,那就本末倒置了。事实上,对于大多数科技专业人才来讲,最重要的外语能力是科技文献的阅读与翻译。

本书编者有着多年大学基础和专业英语教学经验,并特别将在科技英语阅读和翻译方面的心得体会体现在本书的字里行间。全书分为 15 个单元,每一单元由 5 部分组成。第一部分“课文”和第五部分“补充阅读”文章选材广泛,涉及专业面广,深浅长短适度。第二、三、四部分是本书的特色:“科技英语常用表达方式”总结了一系列科技文献中经常涉及的实际表达方法,如问题的提出,方法的介绍,实例的列举,极值、比例的表示等,这一部分甚至可以作为手册来用;“科技英语阅读技巧”介绍了科技英语区别于生活英语的最常用也是最重要的阅读技巧,如为准确理解资料所必需的精读技巧等;“科技英语文体特点”归纳了科技英语的词法和语法方面的特点;“科技英语翻译技巧”用丰富的实例介绍了最基本的科技英语翻译方法。每一单元主题突出,栏目设置新颖,配以练习及参考答案,有助于读者系统全面地掌握科技英语阅读、翻译甚至写作知识。

本书以简明实用为特色,可作为理工科大学高年级专业英语教材,也适用于广大科技工作者学习参考。

限于作者水平,书中定有不妥之处,敬请读者指正。

编 者

2003 年 5 月于北京

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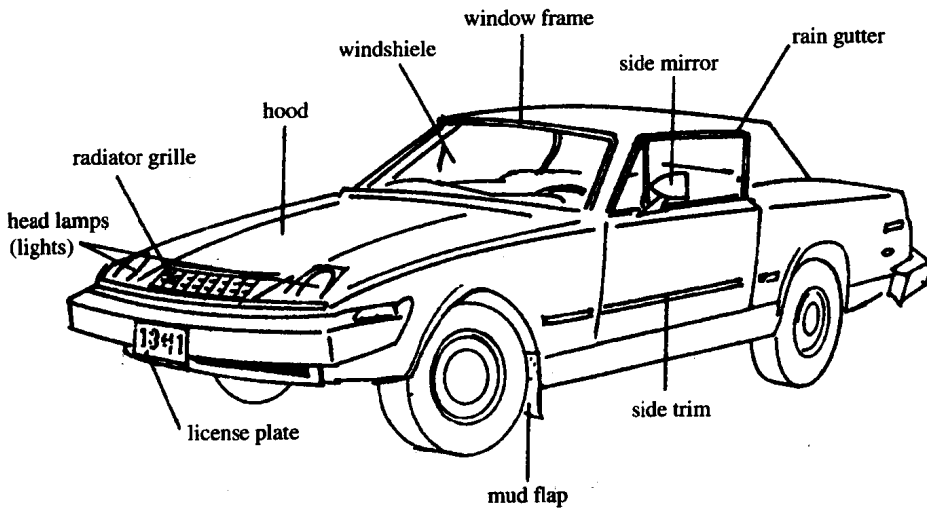
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Unit One

Aerodynamics in Car Design

Part I Text 课文

Automobile designers are working on ways to build automobiles that get good gas mileage. One way to do this is to make cars more streamlined by reducing drag, or wind resistance. Scientists define drag as a force that retards, or slows, an object that is moving through the air. All moving objects are subject to drag. Studies estimate that at 88 kilometers an hour, one-half of the car's fuel and more than 60 percent of the car's horsepower are used to overcome drag. So if car designers can reduce drag they can improve on the car's gas mileage, or fuel efficiency.



To find out more about drag, car designers use engineers who are specialists in aerodynamics. Aerodynamics is a science that involves the study of moving air and the forces that act on objects moving through the air.

The aerodynamic specialists measure air resistance in units indicating coefficient of drag, or CD. The coefficient of drag is the ratio of the amount of wind resistance an object encounters to that of a flat plate of the same weight held vertically. As an example of CD, a 1.2- by 2.4-meter piece of plywood held vertically would have a CD of about 1.1. Other shapes would have a lower CD. A watermelon of the same weight as the plywood would have a lower CD. A falling parachute

would have a CD of about 1.3. In comparison, the typical automobile would have a CD of about 0.45.

Wind Tunnels: The Basic Tool

Engineers use wind tunnels to study the CD of automobiles. Wind tunnels are the basic tool of aerodynamic research. They are used to test design models, or smaller representations, of bridges, buildings, spacecraft, and most recently, automobiles. A wind tunnel can have a width of 12 to 24 meters and be as long as 275 meters. The tunnel has a special section where a test model is placed. The object tested can be a full-size car or a clay model of the real thing. A huge fan blows air into the test section at about 80 kilometers an hour. During this time the aerodynamic specialist checks the areas of the car where there may be turbulence, or irregular air movement. Some specialists use powerful lights to check turbulence. Other engineers use smoke, small pieces of paper, or other visible substances in the same way.

The wind tunnel studies have located several trouble spots where drag occurs around the car. One of the major problems is the underside of the car, where there are many exposed parts. This area accounts for about 20 percent of the drag. The rear section of the car also presents a problem. All the air that rushes from the front of the car collects in the back and creates a vacuum, which pulls the car backwards. Another trouble spot is the area around the window frames. Even license plates, windshields, and side mirrors are areas of drag.

Design Improvements

The wind tunnel studies have helped make many aerodynamic improvements in automobiles. Today many cars have hoods that slope to act as wedges against the wind. Windshields are also better designed to cut down on wind resistance. Special dams are installed under the front section of the car to reduce the flow, or movement of air under the car. Other improvements include retractable headlamps and smaller radiator grills. Some designers have stopped using radiator grilles altogether. Others want to eliminate mud flaps, rain gutters, and even side trim to reduce air turbulence.

Aerodynamics will play a major role in the design of future automobiles because of the importance of improving gas mileage. And that means the consumer might see the automobile change drastically in size and shape from what it looks like today.

Exercise

- 1. Directions:** *According to the text, answer the following questions.*
- 1) What kind of automobiles are automobile designers working on ways to build?
- 2) What is the definition of drag?
- 3) What can car designers improve on if they can reduce drag?
- 4) What is Aerodynamics?
- 5) How do the Aerodynamic specialists measure air resistance?

- 6) How do scientists check turbulence?
- 7) How many trouble spots have the wind tunnel studies located? What are they?
- 8) Why are windshields better designed?
- 9) What have some designers stopped using?
- 10) Why is it that Aerodynamics will play an important role in the design of future automobiles?

2. Directions: *Read the following statements carefully and decide whether they are true or false according to the text. Write "T" for true or "F" for false in front of each statement.*

- 1) ___ One way to build automobiles that get good gas mileage is to make cars more streamlined by increasing drag or wind resistance.
- 2) ___ All objects are subjected to drag.
- 3) ___ A falling parachute would have a CD of about 1.5.
- 4) ___ Engineers use wind tunnels to study the coefficient of drag of automobiles.
- 5) ___ Other engineers use smoke, small pieces of paper, or other visible substances to check turbulence.
- 6) ___ The underside of the car where there are many exposed parts takes up about 20 percent of the drag.
- 7) ___ There is no drag on license plates.
- 8) ___ Today a lot of cars have hoods which slope to serve as protectors against the wind.
- 9) ___ Special dams are fixed under the rear section of the car to cut down the flow, or movement of air under the car.
- 10) ___ In order to cut down the air turbulence, some designers want to remove mud flaps, rain gutters and side trim.

3. Directions: *Put the following into Chinese.*

The wind tunnel studies have helped make many aerodynamic improvements in automobiles. Today many cars have hoods that slope to act as wedge against the wind. Windshields are also better designed to cut down on wind resistance. Special dams are installed under the front section of the car to reduce the flow, or movement of air under the car. Other improvements include retractable head lamps and smaller radiator grilles. Some designers have stopped using radiator grilles altogether. Others want to eliminate mud flaps, rain gutters, and even side trim to reduce air turbulence.

Part II Usages and Expressions of Scientific and Technical English

科技英语常用表达方式

1. Make + Noun + Adjective

This	makes	the problem	easy. difficult. interesting.				
	makes renders	the metal	hard. soft. strong. tough.				
This	makes renders	the metal	harder. softer. stronger. weaker.	=	This	hardens softens strengthens weakens	the metal.
This	makes	the metal	longer. shorter.		=	This	lengthens shortens
		the screw	tighter. looser. flatter.	tightens loosens flattens			the screw.
		the hole	wider. deeper. broader.	widens deepens broadens			the hole.

2. Quantity

The earth contains	few not many a few some		number of	precious metals.
	a	small moderate certain		
	a great many a lot of plenty of		amount of	useful substances.
	a	large great considerable		
	little not much a little some		amount of	uranium.
	a	small moderate certain		
a great many a lot of plenty of		amount of	iron ore.	
a	large great considerable			

(续)

The engine The motor	produces	a	certain negligible small moderate considerable large great	amount of	power.
A	certain moderate considerable large	percentage proportion part quantity amount			of the world's coal lies in this country.

3. Contents: Contain, Consist, Comprise, Constitute, Include

- 1) The packet *contains* 20 cigarettes.
- 2) The gas *contains* about 5½% of carbon monoxide.
- 3) The alloy *contains* 5% nickel and 5% iron.
- 4) The tank *contains* 100 gallons of oil.
- 5) The carbon monoxide *content* was about 5%.
- 6) The moisture *content* of the cylinder increased.
- 7) Part of the heat *content* of the gases is lost.
- 8) He emptied out the *contents* of the box.
- 9) A tank is a large *container* for holding liquids.
- 10) The class *consists of* twenty-four students.
- 11) The atmosphere *comprises* a number of gases.
- 12) The machine is *composed of* several different parts.
- 13) Cast-iron *is made up of* about six different substances.
- 14) The factory produces *components* for aircraft.
- 15) The resultant force acting on an aircraft wing may be resolved into a vertical component and a horizontal *component*.
- 16) The *composition* of cast-iron is different for different purposes.
- 17) Twenty-four students *constitute* the class.
- 18) A number of gases *form* the atmosphere.
- 19) Ferrite and carbon *make up* mild steel.
- 20) Ferrite and carbon are the *constituents* of mild steel.
- 21) The students in the class *include* three from Germany and four from France.
- 22) The gases in the atmosphere *include* oxygen and nitrogen.
- 23) The mixture in the furnace *includes* a certain amount of limestone.

