航空类阅读教材

# 英 语

## 上 册

航空类英语阅读教材编写小组编

一九八二年七月

航空类阅读教材

# 英　语

上　册

航空类英语阅读教材编写小组编

一九八二年七月

# 前　言

本教材是根据高等学校理工科英语教学大纲（草案）专业阅读阶段的要求编写的，它是基础阶段教材的继续。供高等航空院校学生及具有一定科技英语基础的有关航空科技人员使用。

本教材的目的是进一步培养阅读和翻译航空专业有关的英语书刊的能力。本教材分上下两册，供两学期使用。

本教材（上册）共十七课。每课包括课文、词汇、注释、练习和两篇阅读材料。课文及阅读材料均选自原文书刊，个别地方作了删节。内容为有关航空方面的科技文章，文章内容尽量避免偏专，语言上有一定的难度，语言规范。课文及阅读材料中共出现生词1300个，短语和词组187个，印刷符号约为148000。

在基础阶段的教材（上海交大一、二、三册）课文中未出现的词汇均列为本教材的生词，除每课课文及阅读材料后注有生词外，还列有总词汇表，以便查阅。翻译及理解短文中出现的生词未注出，以培养学生使用词典的能力。

练习的目的是复习课文中的词汇及短语，巩固已学过的重点语法内容及提高翻译及理解文章的能力。

本教材课文及阅读材料的分量大于大纲的规定，使用时可根据不同要求自由选用。

由于我们水平有限，编写时间仓促，教材中一定有不少错误缺点，希望批评指正。

本教材编写的有：西北工业大学（主编单位）徐立基、郭正行，北京航空学院江载芬、杨立三，南京航空学院许光锐。南昌航空学院王志纯，沈阳航空学院傅佩及西北工业大学舒祥熙等同志对课文的内容提出了宝贵的意见。

编　者

1982年7月

# CONTENTS

## Lesson 1

# Flying like a Bird?

Man has always wanted to fly. From the ancient days until 1783, the problem of human flight was thought about mainly in terms of artificial wings flapped by the movements of human arms and legs.

Even as brilliant a mind as that of Leonardo da Vinci (1452—1519) believed that man would be able to fly only by imitating birds in flight[1]. Living in an age of primitive science and rudimentary technology, da Vinci was incapable of imagining any sources of power different from those available at the beginning of the sixteenth century—the power developed by human and animal muscles, and the power developed by wind and falling water. Hence his design, for a man-powered, heavier-than-air craft. A parachute which da Vinci designed seems from his sketches to be more practicable, but there is no evidence that it was ever tested. He also designed a helicopter of a sort, applying the Archimedean screw to the air.

After da Vinci a long time was to pass before a solution to the problem of human flight was

discovered, though men never ceased to dream of the possibility of flying through the air like birds. In 1680 G. A. Borelli published a work of biology, in which he stated that men, as compared with birds, had a very poor weight-to-power ratio and that it was impossible for men to fly using only their own strength. Yet some eccentric birdmen still persisted in their efforts to fly by attaching to themselves muscle-operated wings.

The mistake that Leonardo and other fly-like-a-bird enthusiasts made was in thinking that birds swim through the air as men swim in water. They thought that as a bird's wings beat down, like a man doing the butterfly stroke, the bird is lifted up and forward[2]. It is only recently, through the examination of bird flight as seen by high-speed photography, that the action of birds' wings has been recognized as being much more complicated than earlier misconceptions allowed[3].

**Bird Flight**

In normal flight, the outer half of a bird's wing moves in a semi-circle. As the wing beats down, the wingtip moves downward and forward so that the outer primary feathers tend to seperate, and the air pressure twists each feather into the shape of

a small propeller which assumes the proper pitch to drive the bird forward. In the case of certain "high aspect ratio" bird wings (i. e. long, narrow wings) such as those of gulls, the feathers do not separate, but the whole of the outer portion of the wing twists into a propeller on the downstroke. Thus the bird is actually driven through the air like an airplane. The inner half of the wing moves comparatively little, yet supplies the necessary lifting force at all times.

On the upstroke, which is made at about twice the speed of the downstroke, the wingtip moves upward and backward, providing a certain amount of lift but very little thrust. The "whirr" of birds' wings is the sound of their propellers—the primary feathers, which travel up and down at great speed even in slow-flapping birds.

Birds take off and land into the wind whenever possible, to obtain maximum lift with minimum groundspeed. Just as an airplane's speed is reduced by the use of flaps along the trailing edge of the wing, which are lowered to increase lift and prevent stalling, so birds provide additional braking by using their tails as flaps and by changing the angle of attack of their wings. As birds "rear back" on landing, they are not only slowing down, but obtain-

ing positive lift upward—like a helicopter, because their propelling primary feathers are now beating from back to front in relation to the ground, and thus provide lift by thrusting *upward*.

This brief description of bird flight shows how impossible were men's dreams of ever flying like a bird. Not only did men lack the muscle power, they did not realize that the apparently simple-looking flapping of a bird's wings comprised a great many aerodynamic principles of which they were completely ignorant.

**New Words**

1. artificial [ɑːti'fiʃəl] *a*. 人工的，人造的
2. wing [wiŋ] *n*. 机翼，翅膀
3. flap [flæp] *v*. 拍动，拍打
   *n*. 襟翼
4. leg [leg] *n*. 腿
5. brilliant ['briljənt] *a*. 光辉的，卓越的
6. imitate ['imiteit] *vt*. 模仿，摹拟，仿制，仿造
7. bird [bəːd] *n*. 鸟
8. evidence ['evidəns] *n*. 根据，证据
   *vt*. 证明，使明显
9. primitive ['primitiv] *a*. 原始的
10. rudimentary [ruːdi'mentəri] *a*. 基本的，初步的

11. beginning [bi'giniŋ] *n.* 开始，开端
12. helicopter ['helikɔptə] *n.* 直升飞机
*vt.* 用直升飞机载送
*vi.* 乘直升飞机
13. sort [sɔ:t] *n.* 种类，类别
14. biology [bai'ɔlədʒi] *n.* 生物学
15. eccentric [ik'sentrik] *a.* 古怪的；偏心的，离心的
16. birdman ['bə:dmæn] *n.* 鸟类学家；飞行员
17. persist [pə(:)'sist] *vi.* 坚持；持续
18. mistake [mis'teik] (mistook [-'tuk], mistaken [-'teikən]) *vt.* 误解，误会，弄错
*vi.* 弄错
*n.* 错误
19. enthusiasm [in'θju:ziæzəm]
*n.* 热情；积极性
20. beat [bi:t] (beat, beaten ['bi:tn])
*vt.* 打；冲击
*vi.* (连接地)打，敲；跳动
*n.* 敲打；跳动(声)
21. butterfly ['bʌtəflai] *n.* 蝴蝶；蝶形物
22. stroke [strəuk] *n.* 打击
23. examination [igzæmi'neiʃən]
*n.* 检查，考试
24. photography [fə'tɔgrəfi] *n.* 摄影术
25. recognize ['rekəgnaiz] *vt.* 认识；认出；承认

26. misconception['miskən'sepʃən]
*n*. 误解，错误观念
27. semi-circle ['semi'sə:kl] *n*. 半圆
28. wingtip ['wiŋtip] n. 翼尖，翼梢，机翼端
29. feather ['feðə] *n*. 羽毛
30. twist [twist] *v*. 拧，扭；盘旋
*n*. 扭转；盘旋
31. pitch [pitʃ] *n*. 俯仰；俯仰角；螺距
32. gull [gʌl] *n*. 鸥
33. downstroke ['daunstrəuk]
*n*. 向下击
34. inner ['inə] *a*. 内部的，内心的
*n*. 内部；里面
35. comparatively [kəm'pærətivli]
*ad*. 比较地，稍稍
36. upstroke ['ʌpstrəuk] *n*. 向上击
37. twice [twais] *ad*.&*n*. 两次；两倍
38. whirr [wə:] *vi*. 飞旋；呼呼地转
*vt*. 使呼呼地转(或飞)
*n*. 旋转声，呼呼声
39. slow-flap ['sləufiæp] *v*. 缓拍
40. trail [treil] *v*. 拖曳；落后于
41. edge [edʒ] *n*. 缘
42. stall [stɔ:l] *n*. 失速
*vt*. 使失速
*vi*. (机器等)停车，出故

降，失速

43. tail [teil] *n*. 尾巴；尾翼
44. angle ['æŋgl] *n*. 角；角度
45. rear [riə] *n*. 后部，后面
*a*. 后面的，后部的
*vi*. 高耸
46. front [frʌnt] *n*. 前部，前面
47. relation [ri'leiʃən] *n*. 关系，联系
48. description [dis'kripʃən] *n*. 描写，叙述；说明(书)
49. apparently [ə'pærəntli] *ad*. 显然；表面地
50. comprise [kəm'praiz] *vt*. 包含，包括
51. aerodynamic ['ɛərəudai'næmik]
*a*. 空气动力学的，气体动力学的
52. ignorant ['ignərənt] *a*. 无知的，不知道的

## Phrases and Expressions

1. persist in 坚持
2. a butterfly stroke 蝶式游泳，蝶泳
3. recognize ... as 承认……是
4. in the case of 就……而论；提到，关于
5. at all times 总是；始终
6. be ignorant of 不知道，不懂

## Notes

1. Even as brilliant a mind as that of Leonardo da Vinci (1452—1519) believed that man would

be able to fly only by imitating birds in flight. 甚至象列奥纳多·达·芬奇(1452—1519)这样很有才智的人都认为，人只有模仿飞鸟才能飞行。

第一个 as 是副词，修饰形容词 brilliant。第二个 as 是从属连接词，引导比较状语从句， that 是指示代词，代替 mind。比较：

such a great scientist as Newton 象牛顿这样伟大的科学家，as 为关系代词，代替 scientist。

2. They thought that as a bird's wings beat down, like a man doing the butterfly stroke, the bird is lifted up and forward.
他们认为，当鸟儿的翅膀向下拍打的时候，象人在蝶泳时一样，鸟儿就上升，就向前。

a man doing the butterfly stroke 是一个带逻辑主语的动名词短语，作介词 like 的宾语。

3. It is only recently, through the examination of bird flight as seen by high-speed photography, that the action of birds' wings has been recognized as being much more complicated than earlier misconceptions allowed.
只是在最近，通过用高速摄影机对鸟的飞行进行观察的试验，才认为鸟的翅膀的动作比早期人们的错误观念所认为的要复杂得多。

这是一个强调句型，强调状语。

## Exercises

1. Put the following expressions into Chinese:

1) even as brilliant a mind as that of Leonardo da Vinci
2) discover a solution to the problem of human flight
3) dream of the possibility of flying through the air like birds
4) persist in their efforts to fly
5) be recognized as being much more complicated than earlier misconceptions allowed
6) twist each feather into the shape of a small propeller
7) twist into a propeller on the downstroke
8) by the use of flaps along the trailing edge of the wing
9) by using their tails as flaps
10) through the examination of bird flight as seen by highspeed photography

2. Put the following expressions into English:

1) 利用人的手脚的动作拍动的人造机翼
2) 利用风力和落水产生的动力
3) 模仿飞行中的鸟
4) 似乎更切实可行
5) 他们完全不知道的许多空气动力原理