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前 言

为了更好地吸收国外的有益经验,促进我国水利电力事业的发展,我们为水利电力战线的广大科技人员和大专院校师生、干部班、研究生班及函授班同学能顺利阅读和翻译科技文献编写了这本教材。

全书内容均选自近年来出版的英、美等国的专业书刊杂志等原著。在选材过程中,我们十分重视语言共核和科技英语的特点。

课文由浅入深,取材广泛,包括水工结构、港口工程、水能利用、电力系统、农田灌溉、水文学、工程力学、水利经济管理、水利自动化及环境保护等。

全书共 30 课。每课的内容有课文、词汇、词组、专有名词、注释、参考译文(编者从有利于学习外语的角度出发,译文尽可能采用直译)。书末附有总词汇表,便于读者查阅。

学完本教材,读者不仅可掌握科技英语的常用结构,而且能学到水利电力专业方面的基本词汇约 2000 左右,为顺利阅读水利电力专业书刊打下坚实的语言基础。

本书定稿前,特请河海大学胡方荣教授对全书进行了校订。承蒙魏中明、索丽生、李洪良等同志在本书选材过程中,提供了某些资料和一些宝贵意见,编者在此表示衷心的感谢。

因编者水平所限,错误和不当之处在所难免,敬请读者批评指正。

编 者

1989 年 5 月

CONTENTS

Lesson One	Some Information About the Gezhouba Project
第一课	葛洲坝工程…………… (1)
Lesson Two	Port of Shanghai
第二课	上海港…………… (9)
Lesson Three	Pollution Sources
第三课	污染源…………… (18)
Lesson Four	Water Cycle
第四课	水分循环…………… (26)
Lesson Five	The Electric Power System
第五课	电力系统…………… (35)
Lesson Six	Water Resources of the World
第六课	世界水资源…………… (46)
Lesson Seven	Overflow Spillways
第七课	溢洪道…………… (62)
Lesson Eight	Turbines
第八课	水轮机…………… (73)
Lesson Nine	What Causes Flooding
第九课	洪水是怎样形成的…………… (83)
Lesson Ten	Tidal Power
第十课	潮汐能…………… (93)
Lesson Eleven	Electric System Monitoring
第十一课	电力系统监控 …… (102)

Lesson Twelve	Dam Safety and Earthquakes(1)	
第十二课	坝的安全和地震(一).....	(112)
Lesson Thirteen	Dam Safety and Earthquakes(2)	
第十三课	坝的安全和地震(二).....	(121)
Lesson Fourteen	The Characteristics of Fluids	
第十四课	流体的特性.....	(130)
Lesson Fifteen	Mechanics of Materials	
第十五课	材料力学.....	(138)
Lesson Sixteen	Dams	
第十六课	坝.....	(150)
Lesson Seventeen	Pumps and Pumping	
第十七课	水泵与抽水.....	(162)
Lesson Eighteen	Reservoirs	
第十八课	水库.....	(174)
Lesson Nineteen	Hydro-electric Power	
第十九课	水力发电.....	(185)
Lesson Twenty	Distribution Transformers	
第二十课	配电变压器.....	(203)
Lesson Twenty-one	The Runoff Cycle	
第二十一课	径流循环.....	(214)
Lesson Twenty-two	Hydrology	
第二十二课	水文学.....	(224)
Lesson Twenty-three	Irrigation Canals	
第二十三课	灌溉渠道.....	(236)
Lesson Twenty-four	Environmental Pollution	
第二十四课	环境污染.....	(249)
Lesson Twenty-five	Evaporation	

第二十五课	蒸发.....	(259)
Lesson Twenty-six	Properties of Concrete	
第二十六课	混凝土的特性.....	(271)
Lesson Twenty-seven	Distribution System Planning	
第二十七课	配电系统规划.....	(284)
Lesson Twenty-eight	Port Economics	
第二十八课	港口经济学.....	(294)
Lesson Twenty-nine	Irrigation Methods	
第二十九课	灌溉方法.....	(306)
Lesson Thirty	Underground Water	
第三十课	地下水.....	(328)

Appendix I Vocabulary

Appendix II Phrases and Expressions

Appendix III Proper Nouns

LESSON ONE

Text

SOME INFORMATION ABOUT THE GEZHOUBA PROJECT

The Gezhouba project is the biggest multi-purpose water conservancy project on the Changjiang River.

With a total length of 6,300 km and a drainage area of 1.8 million sq km, the Changjiang River is the third largest in the world. After passing the Three Gorges and Nanjinguan in Hubei, it turns abruptly from east to south and broadens out from 300 m in width to 2,200 m. In the river on the outskirts of Yichang some three km downstream from Nanjinguan are two isles—the Gezhouba and Xiba, which divide the river into three channels known as the great, second and third streams^①. With the great stream as its main channel, the river passes through the other two only in high water seasons. Because of its favourable physical conditions, this locality has been chosen for the site of the Gezhouba project.

The whole project is to be built in two stages. In the first stage, construction will be concentrated on the second and third streams and the great stream will remain open to shipping as usual. In the second stage, the great stream will be closed off and navigation held up to facilitate construction on it^②. During this period,

the second and third streams will be opened to traffic and electricity generated^③.

The Gezhouba project includes a dam across the river, two power stations, three shipping locks, a 27-arch flood-discharge gate, a 12-arch silt-discharge gate and a channel for migrating fish. The 2,521-m-long and 70-m-high dam forms a reservoir with a storage capacity of 1,580 million cubic m of water, serving an area of 1 million sq km^④. The two power stations—one on the great stream and the other on the second—will be equipped with 21 generators with a total designed capacity of 2,715 million KW. When completed, they will be able to turn out 13,800 million kwh annually, an amount trebling the electricity generated in China in 1949^⑤.

The Nos. 1 and 2 shipping gates are designed to permit passage of 10,000-ton passenger and cargo ships and the No. 3 shipping gate ships of less than 3,000 tons. Goods in transit through the shipping gates will be about 30 million tons annually immediately after their completion and 50 million tons in the future. Part of the planned Three Gorges conservancy system, the Gezhouba project will raise the water level of the 100-km-long stretch of the river through the Three Gorges by 20 m. The submerged rocks and shoals will lie deep underwater, thereby greatly improving navigation through this formerly hazardous stretch.

The flood-discharge gate and the silt-discharge gate which are responsible for the regulation of the water level of the reservoir and the safety of the dam constitute the most important parts of the whole project. When let open, they will be able to discharge a

flood with a record flow of 110,000 cubic m of water per second (the flow rate of the great 1954 flood was 60,000 cubic m). A highway and a railway will be built on the top of the dam to join the northern and southern banks of the river.

New Words

1. project [ˈprɒdʒekt] *n.* 工程, 方案, 规划。
2. multi-purpose [ˈmʌltiˈpʊr.pəs] *a.* 多种用途的; 多目标的, 综合的
3. conservancy [kənˈsɜ:vənsi] *n.* 管理, 保护(河, 港, 林)
4. drainage [ˈdreɪnɪdʒ] *n.* 排水, 放水; (河流的)流域。
5. abruptly [əˈbrʌptli] *ad.* 突然地, 陡峭地
6. broaden [ˈbrɔ:dn] *vi.* 变宽, 变阔, 扩大起来
7. width [wɪð] *n.* 宽度, 阔度
8. outskirt [ˈaʊt-skɜ:t] *n.* (常用复)郊区; 外边
9. downstream [ˈdaʊnˈstri:m] *a.* 或 *ad.* (在)下游的; 顺流的(地)
10. isle [aɪl] *n.* 小岛, 岛
11. channel [ˈtʃænl] *n.* 河床, 河槽, 水道, 航道
12. season [ˈsi:zn] *n.* 季, 季节; 时节; 旺季
13. favourable [ˈfeɪvərəbl] *a.* 有利的, 顺利的。
14. locality [ləʊˈkælɪti] *n.* 位置; 地点; 地方
15. site [saɪt] *n.* 地点; 地基; 场所, 工地
16. concentrate [ˈkɒnsentreɪt] *vi.* 集中; 全神贯注; *vt.* 集中; 浓缩
17. ship [ʃɪp] *n.* (大)船; *vt.* 把……装上船; 用船运; 装运; *vi.* 上船; 乘船

18. navigation [nævi'geɪʃən] *n.* 航行, 航海, 航运
19. facilitate [fə'sɪlɪteɪt] *vt.* (不以人作主语)使容易, 使便利, 推进, 促进
20. traffic ['træfɪk] *n.* 交通; 通行, 运输
21. lock [lɒk] *n.* 船闸; 水闸
22. arch [ɑ:tʃ] *n.* (建)拱; 拱门; 弓形结构; *a.* 弓形的; 弓形结构的
23. discharge [dɪs'tʃɑ:dʒ] *vt.* 流出, 排出, 放出; *n.* 流量
24. gate [geɪt] *n.* 大门; 闸门
25. silt [sɪlt] *n.* 淤泥, (河边等地的)淤泥沉积处
26. migrate [maɪ'greɪt] *vi.* (鱼群的)回游, 迁居
27. dam [dæm] *n.* 坝
28. reservoir ['rezəvwa:] *n.* 水库; 蓄水池
29. cubic ['kju:bɪk] *a.* 立方的, 三次的立方体的, 立方形的
30. serve [sə:v] *vt.* 对……适用; 对……有用, 为……服务
31. kwh(=kilowatt-hour) 千瓦小时
32. annually ['ænjʊəli] *ad.* 每年, 年度, 年年
33. treble ['trebl] *vt.* 使成三倍, 使增加两倍 *vi.* 成为三倍, 增加两倍。
34. Nos. (缩)numbers 数, 数字
35. permit [pə(:)'mɪt] *vt.* 允许, 许可; *vi.* 容许
36. passage ['pæsɪdʒ] *n.* 通过, 经过
37. passenger ['pæsɪndʒə] *n.* 乘客
38. cargo ['kɑ:gəʊ] (pl.)cargo(es) *n.* 船货, 货物
39. goods [gudz] (pl.) *n.* 货物

40. transit ['trænsɪt] *n.* 通过; 运输; 运行; 中天
41. immediately [i'mi:djətli] *ad.* 立即, 马上
42. completion [kəm'pli:ʃən] *n.* 完成, 结束
43. stretch [stretʃ] *n.* 河段; 伸展, 伸长。
44. shoal [ʃəʊl] *a.* (水) 浅的 *n.* 浅滩; (退潮时露出的) 沙洲。
45. thereby [ðeə'baɪ] *ad.* 因此, 从而
46. formerly ['fɔ:məli] *ad.* 以前, 从前
47. hazardous [hæzədəs] *a.* 危险的, 冒险的
48. responsible [rɪs'pɒnsəbl] *a.* 负责的, 有责任的。
49. regulation [regju'leɪʃən] *n.* 调节, 规则, 调整
50. safety [seɪfti] *n.* 安全; 安全设备, 保险装置
51. submerge [səb'mɜ:dʒ] *vt.* 浸没, 淹没
52. constitute ['kɒnstɪtju:t] *vt.* 构成, 组成
53. record ['rekɔ:d] *a.* 创纪录的; *n.* 记录
54. bank [bæŋk] *n.* (河, 海或湖的) 岸, 堤; (隧道, 坑等) 的) 边

Phrases and Expressions

1. water conservancy project 水利工程
2. sq km=square kilometre 平方公里
3. in high water 洪水期
4. physical conditions 自然条件
5. close off 断流, 把……隔离开来
6. hold up 阻碍, 中断
7. open to 通向, 开向
8. a dam across the river 拦河坝

9. shipping lock 船闸
10. shipping gate 船闸
11. a 27-arch flood-discharge gate 27孔泄洪闸
12. a 12-arch silt-discharge gate 12孔冲沙闸
13. a channel for migrating fish 鱼道
14. total designed capacity 总设计容量
15. turn out 生产
16. submerged rock 暗礁
17. passenger ship 客轮
18. cargo ship 货轮

proper Nouns

1. The Gezhouba Project 葛洲坝工程
2. Changjiang River 长江
3. Three Gorges 三峡
4. Nanjinguan 南津关
5. Hubei 湖北
6. Yichang 宜昌
7. Xiba 西坝

Notes

① In the river on the outskirts of Yichang some three km downstream from Nanjinguan are two isles—the Gezhouba and Xiba, which divide the river into three channels known as the great second and third streams.

在南津关下游大约三公里处的宜昌市郊，江中有两个小岛——葛洲坝和西坝，把长江分为三条河槽，即大江、二江和

三江。

② In the second stage, the great stream will be closed off and navigation held up to facilitate construction on it.

held up 前省略 will be.

第二期则对大江截流、断航,以利施工。

③ During this period, the second and third streams will be opened to traffic and electricity generated.

在此期间,二江、三江将通航、发电。

④ ...serving an area of 1 million sq km.

受益流域面积 100 万平方公里。

这里“serving”作“受益”解。

⑤ When completed, they will be able to turn out 13,800 million kwh annually, an amount trebling the electricity generated in China in 1949.

when completed = when they are completed.

..., an amount trebling the electricity generated in China in 1949. 是独立分词短语作状语。

建成后,年发电量为 138 亿度,相当于 1949 年全国总发电量的三倍。

【参考译文】

葛洲坝工程

葛洲坝工程是长江上最大的综合利用的水利工程。

长江是世界第三大河,全长 6300 公里,流域面积 180 万平方公里。长江穿过三峡,出了湖北省的南津关以后,突然由

东转而向南，江面宽由 300 米增至 2200 米。在南津关下游大约三公里处的宜昌市郊，江中有两个小岛——葛洲坝和西坝，把长江分为三条河槽，即大江、二江和三江。大江是长江的主河槽，二江和三江只是在洪水期过水。因为其有利的自然条件，此地才被选定兴建葛洲坝工程。

整个工程分两期兴建，第一期在二江和三江施工，大江仍可照常通航。第二期则对大江截流、断航，以利施工，在此期间，二江、三江将通航、发电。

葛洲坝工程包括一座拦河坝、两座水电站、三座船闸、27 孔泄洪闸、12 孔冲沙闸和一座鱼道。坝长 2521 米，高 70 米，所形成的水库库容 15.8 亿立方米，受益面积 100 万平方公里。大江和二江上的两座水电站，装机 21 台，总设计容量为 271.5 万千瓦，建成后，年发电量为 138 亿度，相当于 1949 年中国发电量的三倍。

一、二号船闸可以通过万吨级客货轮，三号船闸可通过 3000 吨级以下的客货轮。这些船闸建成后，年运输能力近期为 3000 万吨，远景为 5000 万吨。葛洲坝是计划中的三峡综合工程的一部分，它将把 100 公里长的三峡河段的水位抬高 20 米，暗礁和浅滩将深埋于水下，从而极大地改善从前这段危险航道的航行。

调节水库水位，保证大坝安全的泄洪闸和冲沙闸是整个工程中最重要的一部分。开启时，它们能宣泄的最大洪水流量为 $110000\text{m}^3/\text{s}$ (1954 年洪水流量为 $60000\text{m}^3/\text{s}$)。坝顶上将修建公路和铁路，沟通长江南北两岸的交通。

LESSON TWO

Text

PORT OF SHANGHAI

Shanghai harbor, the biggest port of China, is a river port, and is situated at the centre of the coastline of China. Through the water it is connected with the Changjiang (Yangtze River) estuary and also connected with the inland waterways of Jiangsu and Zhejiang provinces, on the land it is served by railroads with branches stretched into the port area^①. Traffic here may go to all directions and transportation here is convenient and easy. All these favorable conditions make Shanghai harbor one of the important links of water and land transportation in China.

Shanghai harbor is endowed with good natural conditions. It is ice-free all through the year, and is navigable in all seasons. The climate here is warm with few heavy fog days, and the fog period is about 7% of the total days of the year. It is very seldom hit directly by typhoon, so that it is an ideal wind shelter port. The navigable channel of Huangpu in the port area starts from Wusong breakwater up to the Huangpu River bridge, having a length of about 80 kilometres and a width generally about 500 metres. The tide in the harbor belongs to semi-diurnal tide, with a tidal rise

within the range of 2.5 to 4 metres. A 100,000-ton bulk carrier in half loaded condition may enter the harbor with the tide for further unloading^②.

The Bureau of Shanghai Harbor Administration is a direct subsidiary enterprise of the Ministry of Communication. It has twelve terminals, one passenger terminal, one Harbor Lighter Company, one Harbor Tug Service, one Port Machinery Repairing Plant, one Project Repairing and Building Company, one Research Institute of Science and Technology and three speciality schools, spreading over the east and west banks of the Huangpu River. Moreover, it also has a newly built satellite port situated at the lower reach of Changjiang and within the jurisdiction of Shazhou county of Jiangsu province.

After the founding of new China, through many alterations, expansion and new construction made to the harbor facilities, the aspect of the port has been basically changed. Now it has 95 wharf berths and 84 mooring buoy berths, nearly 300 godowns having a total production floor area of 410,000m² and plenty stacking grounds having a total production area of 950,000m². The harbor can accommodate simultaneously more than 100 ships of 10,000 ton class. Every year, there are about 1,700 ocean-going ships and 15,000 coasters and inland water ships calling the port for loading and unloading.

In the early days after liberation, cargoes were handled by shoulder or shoulder pole, now, man-power is basically replaced by a variety of machinery such as trailers, fork-lift trucks, cranes and belt-conveyors, amounting to 4,000 odd machines. The com-