高等工业学校

英　语

第三册

凌渭民主編

商务印书館

英　语

第三册

凌渭民主编

商务印书館
1963年·北京

內 容 提 要

本书是接續高等工业学校《英語》第二册編写的，供二年級第一学期之用，教学总时数为 50 学时.

全书有分析讀課文 10 課，补充讀課文 9 課，題材都以一般科普性为主. 語法內容在接续第二册已学的基础上，适当加深. 全书总詞汇量約 310 个. 书末附习語表及总詞汇表，便于复习和查閱.

高等工业学校
英　語
第 三 册
凌渭民　主編

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前　言

这册《英語》是接續第二册編写的高等工业学校英語教科书，供二年級第一学期教学之用，教学总时数为 50 学时.

全书有分析讀課文 10 課，补充讀課文 9 課. 按照大綱規定，每課分析讀課文配有适当的語法內容. 补充讀課文配置在分析讀課文之后，一如第一、二册中采用的原則，尽量重复已学过的单詞和語法現象.

課文題材的选取，根据打好語言基本功的目的要求，仍以一般科普性为主，但在語言上有所加深. 語法取材根据科技书籍常出現的語法現象，在接續第二册已学語法的基础上，适当加深，并編写了一定数量的练习. 全书总詞汇量約 310 个.

为了貫彻高等工业学校《英語》教学大綱(試行草案)精神，并为“少而精”、“保証知識学到手”創造条件，課文和語法练习之外，仍旧每隔三課或四課，編有总复习的练习.

书末附有习語表及总詞汇表，以便复习和查閱.

参加本书編写工作的有凌渭民、万明玉、邹人杰、张彭年和方維敏等. 編者学識有限，錯誤在所不免，請大家不吝指教.

編者　1963 年 7 月

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TEXT

ONE OF THE LAWS OF ELECTRICITY

It is known that under proper conditions any substance may become charged to some extent when it is rubbed against a dissimilar substance. The process of producing this condition in an object is called electrification, and the object itself is said to be electrified or charged with electricity. If you hold a glass rod which has just been rubbed briskly with a piece of woollen cloth or flannel over some very small bits of paper, you may see some of them will first jump up to touch the rod and then fly off again. No matter how many times you may try this little experiment, the same thing will always happen. From this it may be seen that electricity always obeys certain rules or laws, as they are called. One of the laws of electricity was discovered by means of the experiment which has just been described. It is that when two objects become charged with the same kind of electricity they are no longer attracted to each other. In fact, they are repelled or pushed away. That is why some of the bits of paper fly away from the rod; they become charged with the same

kind of electricity.

You may be able to observe the workings of this important law of electricity by more experiments. Instead of bits of paper, you may use some very small pieces of charcoal. A burnt match broken into small fragments will supply the charcoal. Put the pieces of charcoal on a piece of metal. Hold the electrified glass rod over them. They will jump up to meet the rod, but as soon as they touch it, they will fly off again more quickly than the pieces of paper did. The pieces of charcoal have no charge before they touch the rod; they are neutral. Once they touch the rod, however, they are electrified or charged with the same kind of electricity which appeared on the rod when it was rubbed, and so are no longer attracted but are pushed away.

It was the discovery of definite facts like this about electricity which eventually made it possible to build all sorts of electric instruments and machinery. Not only this one particular law, but a great many laws govern the behaviour of electricity. By learning a lot of facts about electricity, you will be able to understand it better.

VOCABULARY

extent [iks'tent, eks-] *n.* 程度
rub [rʌb] *v.t.* 摩擦
dissimilar [di'similə] *a.* 不同的
electrification [i'lektrifi'keiʃən] *n.* 感电，带电，电化
electrify [i'lektrifai] *v.t.* 使感电，使带电，使电化
briskly ['briskli] *adv.* 迅速地
woollen ['wulən] *a.* 羊毛的
cloth [klɔθ, klɔ:θ] *n.* 布
flannel ['flænl] *n.* 法兰絨
jump [dʒʌmp] *v.i.* 跳跃
obey [ə'bei] *v.t.* & *v.i.* 遵守，服从

describe [dis'kraib] *v.t.* 叙述，作图
repel [ri'pel] *v.t.* 排斥
charcoal ['tʃɑ:koul] *n.* 木炭
fragment ['frægmənt] *n.* 碎片
charge [tʃɑ:dʒ] *n.* 电荷
neutral ['nju:trəl] *a.* 中性的
once [wʌns] *conj.* 一經
eventually [i'ventjuəli] *adv.* 終于，最后
machinery [mə'ʃi:nəri] *n.* 机械
govern ['gʌvən] *v.t.* 支配
behaviour [bi'heivjə] *n.* 行为，性能

IDIOMS AND PHRASES

to some extent 到某种程度，多少
to fly off 飞散
no longer 不再
and so 因此，所以

Exercise 1

Give the Chinese equivalents of the following expressions:

1. the law of electricity described
2. to rub a glass rod briskly with a piece of woollen cloth or flannel
3. to govern the behaviour of electricity
4. to obey rules or laws of electricity
5. the electric instruments and machinery
6. fragments of charcoal

Exercise 2

Give the English equivalents of the following expressions:

1. 在适当情况下
2. 与某种物质相摩擦
3. 向四处飞散
4. 电化过程
5. 互相排斥
6. 了解电的行为到某种程度

Exercise 3

Fill the following blanks with appropriate words given below: once, fragments, briskly, woollen, against, repel, flannel, jump, certain,

dissimilar, electrified, govern, neutral, behaviour, electrification.

1. Any substance rubbed briskly _____ a _____ substance becomes charged.
2. When a glass rod is rubbed against a piece of _____, it will become electrified.
3. Two objects charged with the same kind of electricity _____ each other.
4. The process of making a glass rod charged with electricity by rubbing it _____ against a piece of _____ cloth is called _____.
5. The _____ of charcoal are _____, before they _____ up to touch an _____ glass rod.
6. _____ you study magnetism, you will find that _____ laws _____ the _____ of magnetism.

Exercise 4

Answer the following questions in English:

1. How can you make a substance charged with electricity?
2. What is meant by electrification?
3. What will happen to fragments of charcoal when an electrified glass rod is held over them?
4. Why do some of the fragments of charcoal fly off from an electrified glass rod on touching it?
5. What is the law of electricity described in this lesson?
6. What made it possible to build all sorts of electric instruments and machinery?
7. How was this important law of electricity discovered?

Exercise 5

Translate the following sentences into English:

1. 有許多定律支配电的行为，所以在做电的实驗前我們必須了解这些定律.

2. 用一块法兰絨迅速地摩擦一根玻璃棒时，玻璃棒上会带电，这个过程称为感电.
3. 带有不同种类的电的物体相互吸引而带有同种类的电的物体相互排斥.
4. 木炭碎片一經跳起来接触到一根感电的玻璃棒，它們不再是中性而是带有同种类的电，因此它們又飞散了.
5. 电的实驗我們做得越多，电的行为我們了解得越多.

SUPPLEMENTARY READING

ELECTRICITY

Electricity plays such a vital part in the welfare of nations that this era is called the electrical age. Much of its progress has been made in less than a century. The great inventions based on electricity, such as the dynamo, the telegraph, the telephone, the radio and the moving picture, have been so improved within the last four decades that their efficiency today would astound their inventors.

Today by the mere closing of a switch any house may have light, a factory may operate as if by daylight, stadiums may be floodlighted for night games, etc. These things could not be were electric light not available. Today the human voice may be electrically transported almost instantly to the extremities of the earth's surface and into the surrounding atmosphere, where wires cannot be strung or buried. The electric light, the telegraph, the telephone, the electric motor with its vast applications, the radio and electric cars and trains are common in our everyday life.

VOCABULARY

dynamo ['dainəmou] *n.* 发电机
decade ['dekəd] *n.* 十年間
astound [əs'taund] *v.t.* 使…大吃一惊
closing ['klouziŋ] *n.* 接合，通路
stadium ['steidiəm] *n.* 运动場
floodlight ['flʌdlait] *v.t.* 用汎光照亮
be [bi:] *v.i.* 发生
bury ['beri] *v.t.* 埋藏

IDIOMS AND PHRASES

moving picture 电影
as if 好像
everyday life 日常生活

Exercise

Answer the following questions in English:

1. Why is this era called the electrical age?
2. What electric inventions have been improved within the last four decades?
3. What will happen in the house, the factory and the stadium by the mere closing of a switch?
4. How can the human voice be transported to distant places on the earth and into the surrounding atmosphere?
5. What electric inventions are common in our everyday life?

GRAMMAR

§1 **等立主从复合句** (The Compound Complex Sentence) 一个等立复合句含有一个或更多的从句，称为等立主从复合句．它兼有等立复合句和主从复合句的特点．

§2 **等立复合句的类型** 可有下列各种类型的等立主从复合句：

1. 带有主語从句的等立主从复合句：

When the experiment could be finished was still not known, and he continued working enthusiastically. (什么时候这个实驗能够完成还不知道，他继續热情地工作着.)

2. 带有宾語从句的等立主从复合句:
We have observed *that an increase in the temperature of a volume of gas produces an increase in the internal pressure within the gas,* and this physical property has been made use of in mechanical engineering. (我們观察到，一定体积的气体的温度增加时，气体內压力就增加，这种物理特性已应用于机械工程上.)

3. 带有同位語从句的等立主从复合句:
The fact *that materials expand and contract with the increase and decrease of temperature* is very important to structural engineering; "expansion joints" are provided in any large structure. (材料因温度升降 (增减) 而胀縮的这一事实对建筑工程是很重要的，在任何大建筑中都备有伸縮縫.)

4. 带有表語从句的等立主从复合句:
The result of his effort was *that his invention was greatly improved after he had worked at it for two years,* still he was not satisfied with it. (他的努力的結果是在他研究了二年之后，他的发明已經大大地改进，但是他对这个結果仍不滿意.)

5. 带有定語从句的等立主从复合句:
The substances *that prevent the passage of electricity* are called insulators, while the substances *that allow elec-*

tricity to flow through them freely are called conductors. (阻止电通过的物質称为絕緣体，而容許电流暢地通过的物質称为导体.)

6. 带有狀語从句的等立主从复合句:
Substances will expand or contract *when they are heated or cooled,* but this is not often the case with water. (物質在加热或冷却时会膨胀或收縮，但是水不常是这样.)

Exercise 1

Classify the following sentences syntactically and translate them into Chinese:

1. If new phenomena come to light, as they often do, this old conclusion will have to be revised.
2. Without dust, vapour in the air would not be condensed into raindrops, plants on the earth could not grow, and man would not be able to live.
3. Gravitational effect takes place over immense distances; thus the force of attraction (引力) which the sun exerts on the earth causes the earth to move round the sun in its orbit.
4. Archimedes' discovery of the principle of floating bodies made it quite simple to determine whether the crown was made of pure gold or not, because gold has a volume which in proportion to its weight is smaller than that of any other metal except platinum.
5. It is quite possible that in the future atomic energy will replace electricity in the field of industry, but at the present time electricity still plays a very important part.
6. Much research will have to be carried out before satisfactory insulators can be designed, and the research is to improve the materials and forms of insulators to meet the

present tendency to use higher and higher potential differences for long-distance supplies.

7. Since the temperature of the tungsten filament in the incandescent lamp is so high that it is close to the melting point of tungsten, it is impossible to further improve its efficiency.

Exercise 2

Translate the following sentences into English:

1. 空气的溫度增高时，寒暑表內的水銀上升，是因为表內的水銀随着溫度的增高而膨胀的緣故.
2. 固体的一度空間的变化是指固体的长度随着溫度的变化而改变.
3. 由于人类至今沒有方法把太阳热大規模地儲藏起来，虽然太阳热提供近乎无限的动力源，这种热只是浪費掉而不能帮助人类做許多有益的工作.
4. 在牛頓出版他的《物界原理》之前，許多科学家曾經研究过行星运行的規律，但是他們不能得出一个正确的結論.
5. 导体和絕緣体是两种用途不同的材料，可是两者在电气工程方面都起着这样重要的作用，以致供电处和用电戶都少不了它們.

Lesson 2

Text: Language of Mathematics
Supplementary Reading: The Use of Equations

TEXT

LANGUAGE OF MATHEMATICS

Mathematics has a language of its own, with certain signs and symbols peculiar to it. It is as necessary to

become familiar with these signs and symbols and their uses, in order to understand the language of mathematics, as it is for the shorthand writer to become familiar with the symbols used in his work. Failure to fix them in mind and to learn the definitions and technical terms keeps many students from mastering the mathematical subjects they take up.

The language of mathematics is one of signs and symbols and, in a sense, is an unspoken language. There can be no more universal or more simple language, no language more exempt from error and obscurity. The language of mathematics is the same throughout the world, though the people of each country translate it into their spoken language.

Some of the best known symbols of mathematics are the Arabic numerals, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, the signs of addition, "+", subtraction, "−", multiplication, "×", division, "÷", and equality, "=".

Arabic numerals are used because of their great convenience. They are most convenient to use because they give us a way of writing any amount of numbers while using only a small number of symbols called digits. This is done by attaching different meanings to the same digit. In the number 111, three 1's are used, and each has a different meaning. The 1 on the extreme right stands for the number one, the 1 in the second column from the right stands for the number ten, and the 1 in the third column stands for the number one hundred.

If we want to write the symbol for three tens, we put a 3 into the second column from the right. But we

will not recognize it as the second column unless we write something down in the first column. This makes it necessary to think of three tens as three tens plus no ones, and to introduce a symbol to represent the absence of ones. We use the symbol 0 for this purpose and call it zero. Zero plus any number gives that number again, and zero times any number gives zero.

The signs and symbols of mathematics are used for convenience. They have gradually come into use by general agreement. In the study of mathematics much time should be devoted to the expressing of verbally stated facts in the mathematical language, that is, in the signs and symbols of mathematics, and to the translating of mathematical expressions into common language.

VOCABULARY

sign [sain] *n.* 記号
peculiar [pi'kju:liə] *a.* 独特的，特殊的
familiar [fə'miljə] *a.* 熟悉的
shorthand ['ʃɔ:thænd] *n.* 速記
failure ['feiljə] *n.* 失敗
mind [maind] *n.* 脑，記忆
definition [ˌdefi'niʃən] *n.* 定义
universal [ˌju:ni'və:səl] *a.* 普遍的
term [tə:m] *n.* 术語
subject ['sʌbdʒikt] *n.* 学科
exempt [ig'zempt] *a.* 被免除的
obscurity [əb'skjuəriti] *n.* 含糊
translate [trɑ:n'sleit] *v.t.* 翻譯
addition [ə'diʃən] *n.* 加法
subtraction [səb'trækʃən] *n.* 減法
multiplication [ˌmʌltipli'keiʃən] *n.* 乘法
division [di'viʒən] *n.* 除法
equality [i:'kwɔliti] *n.* 相等
convenience [kən'vi:njəns] *n.* 便利
digit ['didʒit] *n.* 数字
extreme [iks'tri:m] *a.* 极端的
column ['kɔləm] *n.* 行，纵行