

# MINING ENGLISH



高等学校教学用书

## 矿业英语

朱晋科 周本友 编

中国矿业大学出版社

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## 内 容 提 要

为了适应教学需要,本书在编写中注意反映新技术、新材料在采矿业中的应用,大部分内容选自近年来国外新版专业书刊。内容包括煤矿地质、钻眼爆破、凿井、矿山支护、开拓开采、矿山压力及其控制、机械化回采工艺及有关设备、矿井通风安全等主要专业知识。

本书内容丰富,材料新颖。还将课文中的语言难点及长难句进行了详细的注释和翻译,既可作为矿业院校的专业教材,也可供有一定英语基础的技术人员自学参考。

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## 前 言

为了适应矿业院校专业英语的教学需要，我们编写了这本矿业英语教材。考虑到煤炭工业的特点，本教材内容包括煤矿地质；钻眼爆破；凿井；矿山支护；开拓、开采；矿山压力及其控制；机械化回采工艺及有关设备；矿井通风安全等主要专业知识。

近年来，采矿工业发展迅速，新技术、新材料不断出现。本教材在编写过程中注意到反映这一特点，大部分课文均选自近年来国外新版专业书刊。全书共选编 29 课，每课平均 3500~4200 个印刷符号，对于课文中的语言难点及长难句进行了详细的注释和翻译。

本教材曾在中国矿业大学试用，教学实践表明：教材内容的选取、印符数量的安排均较合适。此次出版前，进行了大量增删与修订，可作为矿业院校的专业英语教材，也可供有一定英语基础的专业技术人员自学使用。

本教材修订过程中，曾得到杜计平、赵彦春两位同志的协助，参加了部分选材加工及词汇表的汇总、校对工作。在此一并表示由衷的谢意。

编 者

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李鵬展

## Lesson One

### Three Kinds of Rocks

The rock is the main material which constitutes the earth's crust and is more complex than minerals, because a rock may contain many minerals. Yet there are only three main types of rocks. This does not mean that there are only three different rocks, but means that there are three methods by which the rocks were made. The three types are named igneous, sedimentary and metamorphic.

Igneous rocks are those that came from a molten condition. The pressure and heat inside the earth cause some of the "rock stuff" in the earth to be a liquid<sup>1</sup>. When this hot liquid cools, rock is formed. This rock is called igneous rock. If the "rock stuff" is thrown out upon the surface, it is an extruded rock. If it is thrust into the earth's crust and does not reach the surface, it is an intrusive rock.

The igneous rock usually contains crystals. If the cooling was rapid the crystals will be very small. Sometimes the crystals are so small that they can not be seen without the help of a magnifying glass. The molten material from which the cool, hard igneous rock is formed is known as lava or magma<sup>2</sup>. If the molten rock reaches the surface of the earth it is called lava. While it is in the



earth, it is called magma. Some of the igneous rocks are granite, basalt, porphyry etc. Granite is the commonest of all the igneous rocks and the one with the coarsest grain<sup>3</sup>. It was formed from magma that cooled very slowly. Granite always contains quartz called feldspar, it may also contain mica or amphibole.

The second type is named sedimentary rock. This kind of rock is formed from sediment which has been deposited by water. When rain falls on the land, washes away some of the soil, and wears away some of the rock in the earth's crust, it carries this material along into the rivers. The rivers carry it into the lakes and oceans. Here the sediment settles down, the larger, heavier particles are deposited first, so that the layers are formed<sup>4</sup>. This may be shown by a jar of water to which some sand and pebbles have been added, let the water come to rest and do not disturb, soon layers will be apparent<sup>5</sup>. When a rock shows the presence of horizontal layers of material, the rock is sedimentary. Sometimes the layers are not exactly horizontal, because of the forces that lifted the rock at certain point. Some of the sedimentary rocks are sandstones, shales, and limestone. Since most sediments are deposited in more or less regular layers, or strata, the sedimentary rocks are known as stratified rocks.

The third type is named metamorphic rock. Rocks of this kind have been changed by great heat and pressure in the earth. Originally they may have been sedimentary or igneous rocks, but because of the heat and pressure they were changed into something quite different in appearance<sup>6</sup>. These rocks become even harder and their originally coarse grains take on a smooth, sometimes glassy, appearance<sup>7</sup>. For example, marble is metamorphic

and comes from limestone; slate comes from shale; quartzite comes from sandstone. Gneiss is one of the most common metamorphic rock. It is coarse-grained made over granite, shale or sandstone. Whatever its origin, it is harder than the original<sup>®</sup>.

### New Words and Expressions

rock [rɒk] *n.* 岩石

constitute [ˈkɒnstɪtju:t] *v.* 构成, 形成

crust [krʌst] *n.* 壳, 地壳

yet [jet] *conj.* 然而, 但

type [taɪp] *n.* 种类, 类别

igneous [ˈɪɡniəs] *a.* 火成的

sedimentary [sediˈmentəri] *a.* 沉积的, 沉淀性的

metamorphic [metəˈmɔ:fɪk] *a.* 变质的

molten [ˈmoultən] *a.* 熔融的

pressure [ˈpreʃə] *n.* 压力

inside [ˈɪnˈsaɪd] *prep.* 内部, 内在

stuff [stʌf] *n.* 材料, 原料

liquid [ˈlɪkwɪd] *n.* 液体

throw [θrou], threw [θru:], thrown [θroun] *v.* 投, 掷, *n.* 落差

extruded [ɪksˈtru:did] *a.* 喷出的

thrust [θrʌst] *v.* 冲进, 插入

thrust, thrust

intrusive [ɪnˈtru:sɪv] *a.* 侵入的

crystal [ˈkrɪstl] *n.* 晶体, 结晶体

rapid [ˈræpɪd] *a.* 快的, 迅速的

magnify [ˈmæɪnɪfaɪ] *v.* 放大, 扩大

glass [ˈglɑ:s] *n.* 玻璃杯, 镜子, 玻璃  
lava [ˈlɑ:və] *n.* 熔岩  
magma [ˈmɑ:gmə] *n.* 岩浆  
granite [ˈgrænit] *n.* 花岗岩  
basalt [ˈbæsəlt] *n.* 玄武岩  
porphyry [ˈpɔ:firi] *n.* 斑岩  
coarse [kɔ:s] *a.* 粗糙的, 粗的  
quartz [kwɔ:ts] *n.* 石英  
feldspar [ˈfeldspɑ:] *n.* 长石  
mica [ˈmaikə] *n.* 云母  
amphibole [ˈæmfiboul] *n.* 角闪石  
sediment [ˈsedimənt] *n.* 沉积物  
deposite [diˈpɔ:zɪt] *v.* 沉淀, 淤积  
rain [rein] *n.* 雨  
land [lænd] *n.* 陆地, 大陆  
wash [wɔʃ] *v.* 冲刷, 洗  
soil [soil] *n.* 土壤  
wear [weə], wore [wɔ:], worn [wɔ:n] *v.* 磨损, 耗损  
carry [ˈkæri] *v.* 运送(载), 携带  
settle [ˈsetl] *v.* 沉淀(降)  
layer [ˈleɪə] *n.* 层, (阶, 地)层  
jar [dʒɑ:] *n.* 瓶(罐, 坛)子  
pebble [ˈpebl] *n.* 卵石, 小圆石子  
disturb [disˈtɜ:b] *v.* 搅动  
apparent [əˈpærənt] *a.* 可见的, 表面的  
presence [preznəs] *n.* 出现, 存在  
horizontal [hɔriˈzɒntl] *a.* 水平的, 地平的  
exactly [ɪgˈzæktli] *ad.* 确切地, 正(恰)好, 正是

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## Lesson Two

### Origin of Coal ( I )

Coal is a rock derived from wood and other plant tissues that flourished several hundred million years ago<sup>①</sup>. Apparently the plants partially decayed and then were covered, preserved, and ultimately compacted by the other sediments that were deposited upon them. Although coals are sometimes described as forms of carbon, this is not strictly true, they are actually intricate mixtures of complex compound of carbon. Coals differ from one another in composition and properties<sup>②</sup>, and even the various constituents of any one coal may be quite unlike.

Coal as a fuel has played a vital part in the development of industry during the past few centuries. Coke obtained from coal has been used to reduce iron ore to iron for the large-scale manufacture of machinery<sup>③</sup> and coal has produced power to operate these machines. Today coal is used mainly for generating electric power and making coke for the steel industry, while petroleum derived fuels and natural gas have displaced coal for some other purposes. In many countries, for example, the railroads have been completely converted to diesel or electric power since the 1950's, and gas has rapidly taken over the burden of domestic heating. Methods for converting coal to liquid and gaseous fuels are



known, however, and it seems certain that such manufactured fuels will become important as supplements to petroleum and to natural gas<sup>1</sup>.

It is now generally accepted that coal is of vegetal origin, that the geologic processes which in past ages produced the great seams of coal we mine today are still operating to form deposits which are the basis of coal, and that the several kinds of coal now mined are the result of different degrees of alteration of the original material<sup>5</sup>.

Vegetal material (derived from vegetation) is largely composed of carbon, hydrogen, and oxygen. It also contains mineral substance and in some cases a small amount of nitrogen.

Millions of years ago (perhaps about 300 million years for Carboniferous, 100 million for Cretaceous, and somewhat less for Tertiary deposits) the earth's climate and atmospheric composition were particularly favorable for profuse plant growth<sup>6</sup>. There were large areas of level, swampy land or very shallow bodies of water where plants thrived. Generation after generation of swamp plants grew, died, and fell into the shallow waters. There, although they underwent partial rotting, they were preserved against complete decay. The resulting plant debris, called peat, accumulated until in some places it was many feet thick<sup>7</sup>. Ultimately it was inundated, because the land subsided or the sea rose, or possibly for both reasons. Clays, sands, or lime muds containing seashells were then deposited upon this organic matter, such sediments became the shales, sandstones, and limestones that are formed above seams of coal. The weight of sediments compacted the peat, which during the ensuing millennia