

簡易英語科技叢書

人



图书馆

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中 外 出 版 社 出 版

香港九龍彌敦道 500 號 1 樓

電話：3-308932

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時代圖書有限公司發行

香港九龍彌敦道 500 號 1 樓

電話：3-308932

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天虹印刷有限公司承印

九龍新蒲崗大有街 26-28 號三樓

電話：3-210047

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1979 年 3 月版

## 出版說明

《簡易英語科技叢書》是爲初學英語的中國青年學生提供一套閱讀英語科技書籍資料的參考讀物。

本叢書包括十六個科學課題，分爲十六冊出版。每一課題構成一個完整的知識讀物。這十六個課題把目前國外學校教學中的基礎科學內容都包括進去了。

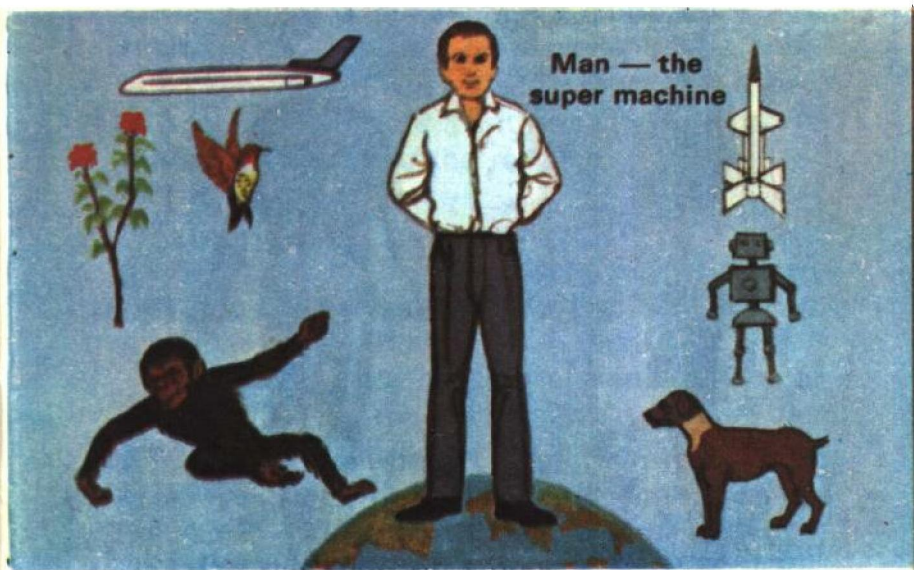
爲提高讀者科學知識和閱讀興趣，每一分冊均附有生動的彩色插圖，英語文字力求淺顯，使一般初學英語的中國青年學生都能接受。

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## INTRODUCTION

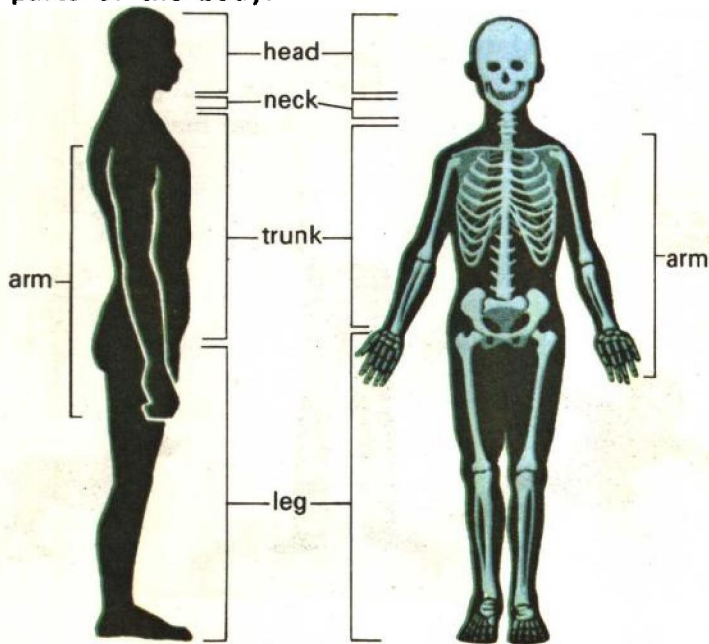
Our bodies are wonderful machines. They have more parts and can do more types of work than any machine in the world. No machine has parts as wonderful as the eye or ear or heart or brain. The most advanced machine cannot grow, mend parts that are injured or reproduce like our bodies can. Above all, we are able to think and love unlike any machine or any other living thing. That is why we say that Man is the supreme living thing in this world. In this book we shall learn as much as possible about our wonderful bodies.



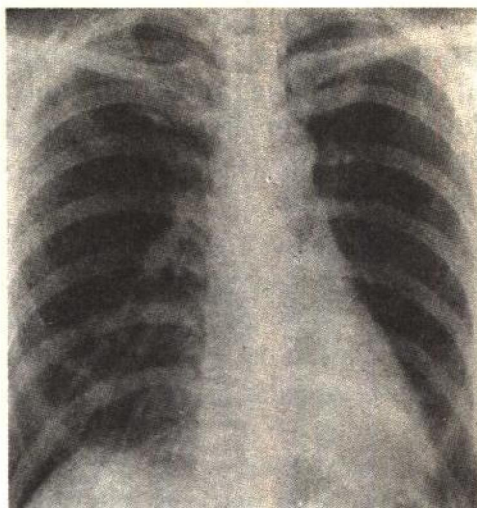
## THE BONES

Our bodies are similar in many ways. We may not look exactly alike, but our body shapes are more or less the same. Our bodies are made up of several parts — the **head, neck, trunk, arms** and **legs**. These parts are held together by a framework called the **skeleton**. The skeleton is made up of **bones**. We cannot see our bones because they are covered by our muscles and skin. However, we can feel them.

The skeleton forms a framework for the different parts of the body.



**This is an X-ray  
photograph.  
Can you see  
the ribs?**



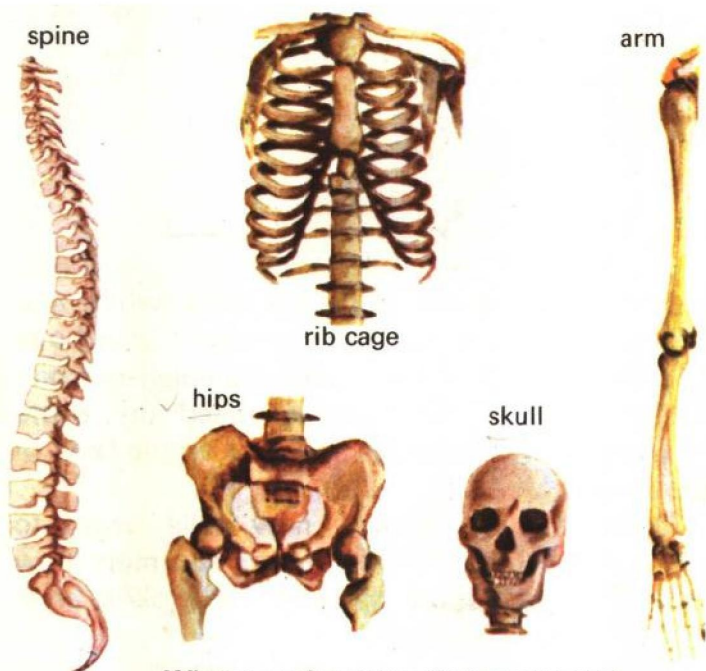
The bones of our body are hard, white and strong. They are not easily broken. If a bone is broken you will see a soft brownish-red part in the centre. This part is called the **bone marrow**. It makes the red and white cells of the blood.

When a bone breaks, new cells begin to grow at the broken ends. More and more new cells are formed until finally the broken ends meet and join together.

To find out if a bone is broken, the doctor uses an **X-ray machine**. This machine can photograph the inside of the body. The photographs it takes are called **X-ray photographs**. Have you ever been X-rayed before? The picture above shows an X-ray photograph of the chest. The ribs can be seen clearly.



The main support of the body is the **backbone** or **spine**. It is made up of a long row of small bones joined to one another. It is found only in the neck and trunk. Animals like fishes, frogs, lizards, birds and dogs have backbones too.



What are the uses of these bone?

Bones not only support our bodies but also help to protect important organs. The **skull** protects the brain. The **ribs** protect the lungs and heart. The **hips** protect part of the food canal. The **spine** protects the spinal cord.

There are different types of bones in our bodies. Some are flat, some are short, some are long and some are irregular in shape. Can you name such types of bones?

## THE JOINTS

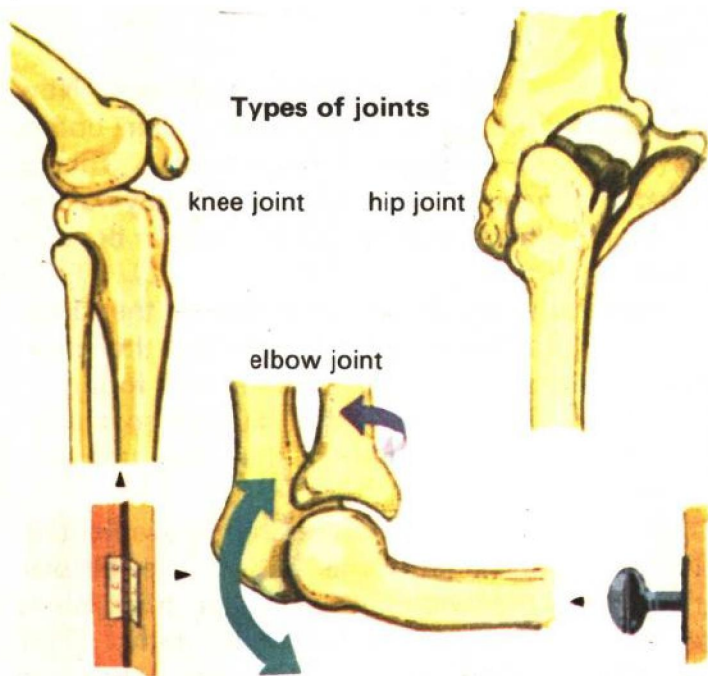
We have just learned about the bones. Now let us find out how they move. Our bodies can make thousands of movements. This is because the bones are not joined firmly to one another. Where a bone joins another bone, a **joint** is formed.

There are two types of joints in the body. They are the **immovable joints** and the **movable joints**. Immovable joints are found in the skull. The bones of the skull fit so closely together at the joints that they are not able to move.

Movable joints allow the free movement of the different parts of the body. The **elbow**, the **knee**, the **shoulder** and the **hip joints** are the main movable joints of the body. There are different types of movable joints. The main types are **hinge joints**, **pivot joints** and **ball-and-socket joints**.

The knee joint is a good example of a hinge joint. It works like the hinge of a door and can only bend backwards. The elbow joint is partly a hinge joint and partly a pivot joint. It is a hinge joint because, like the knee, it can bend in one direction only. It is a pivot

joint because, unlike the knee, it can cause a rotating movement. It allows the lower arm to rotate on the elbow. You can notice this if you turn the knob of a door.



The hip and shoulder joints are ball-and-socket joints. In the shoulder joint, the rounded end or 'ball' of the upper arm bone fits into a cup-like space or 'socket' of the shoulder blade. This allows you to swing your arm freely in a circle.

Besides the different joints mentioned above, do you know of any other joints in your body?

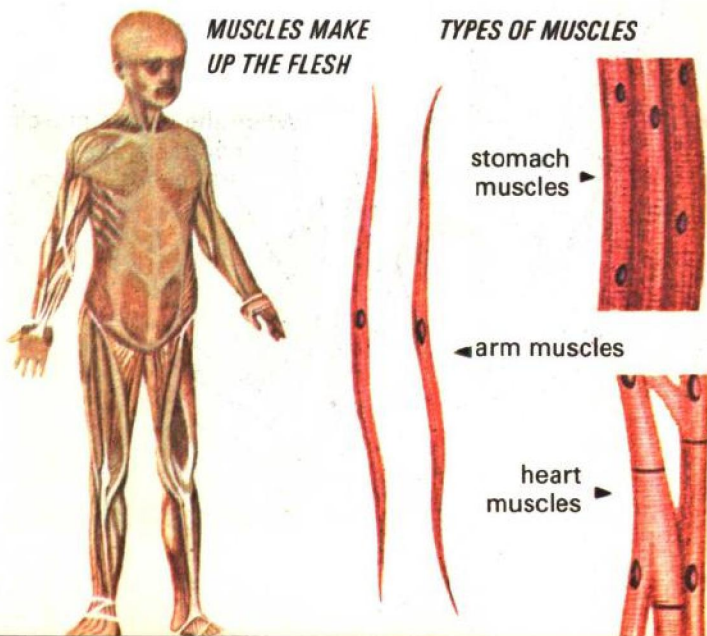
## THE MUSCLES

There are more than 600 muscles in your body. They make up the **flesh** that lies between the skin and the skeleton.

Muscles can contract and relax. Their contraction and relaxation causes body movements.

Many of the muscles of the body are attached to bones and cause their movements. The bones of the upper arm and lower arm, the upper arm and shoulder, the thigh and shin and the thigh and hip are attached to each other by powerful muscles. However, not all muscles are attached to bones. The muscles of your stomach and heart are examples of such muscles.

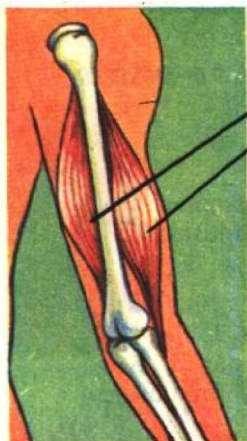
### The muscles of the human body



## Things to Do

Can you feel the movement of your muscles? You certainly can. Do the following things to find out how your muscles move.

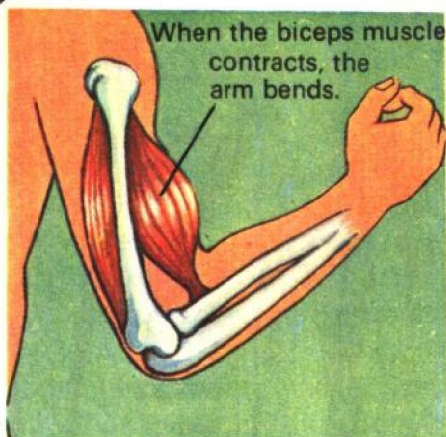
- (a) Hold your upper arm tightly and move your lower arm up and down. Can you feel the muscles pulling? The muscles which help your lower arm to move are the **triceps** and **biceps muscles**. Which muscle contracts when the lower arm moves downwards and which contracts when it moves upwards?
- (b) Lift up a chair. Which of the body muscles move?



**Movement of the arm**

triceps muscle

biceps muscle

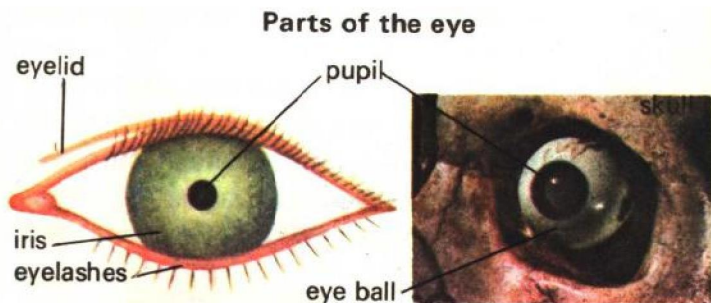


When the biceps muscle contracts, the arm bends.

## THE EYE

You use your eyes to see things around you. A blind man cannot do so. If you want to know what it is like to be blind, just blindfold yourself. You will find that the world is a dark and gloomy place.

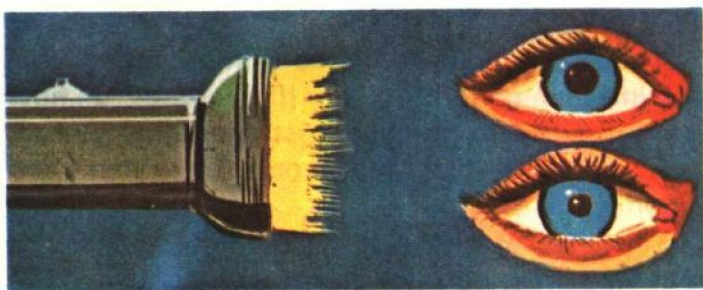
The part of the eye which you can see is only a small portion of the whole eye. The eye is actually about the size of a table-tennis ball. Much of it lies within the skull. The front portion of the eye is made up of three parts — the **cornea**, the **iris** and the **pupil**. It is protected by the **eyelid** and **eyelashes**.



The cornea is a transparent white part which surrounds and covers the iris. The iris is the coloured part of the eye. It may be black, blue, brown or green in colour. It is actually a ring of muscles which can contract and relax. The pupil is a round opening in the middle of the iris. It is always black in colour.

If there is too much light the iris relaxes, thus making the pupil smaller. In this way,

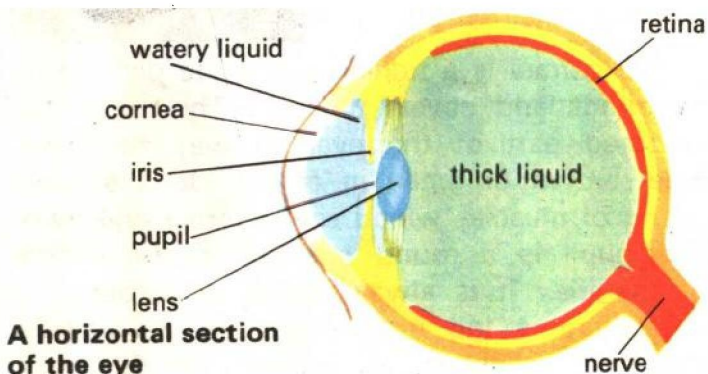


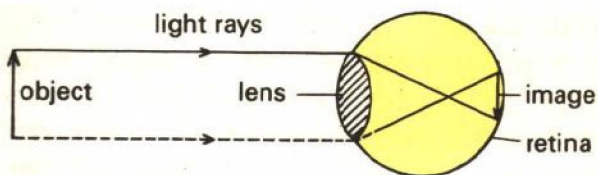


**What happens to the eye when there is too much light?**

only a certain amount of light can enter the eye through the pupil. If there is too little light, the iris contracts. This makes the pupil bigger. Thus more light is allowed to enter the eye.

Look at the diagram of a section of the eye. Behind the iris is the **lens** which is transparent. There is a space between the lens and the cornea. This space is filled with a watery liquid. There is another space behind the lens and





**How an image is formed**

this is filled with a thick liquid. The layer shown in red is called the **retina**. It lines the space behind the lens and acts like a screen. There is a nerve which connects the eye to the brain.

We see an **object** only when light from that object enters the eye through the pupil. The light then passes through the lens and falls on the retina. An **image** is formed here. A message about the image is then sent to the brain through the nerve.

Since your eyes are so important to you, you should take great care of them. If your eye-sight is good, you will be able to see things clearly. If it is bad, you should see a doctor. Your bad eye-sight can be corrected by wearing a proper pair of spectacles.

**Why is this girl wearing spectacles?**

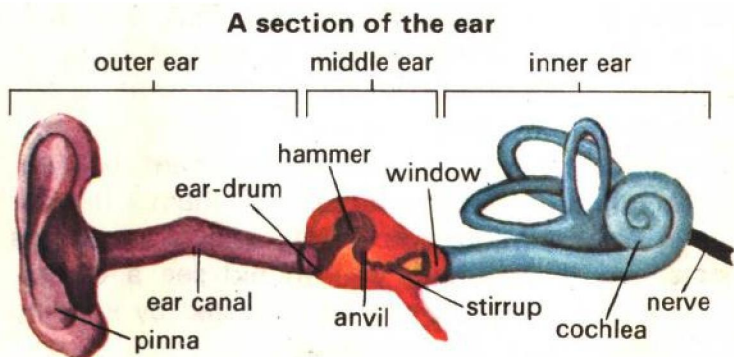




## THE EAR

Your ears allow you to enjoy music and listen to what your friends say. You are able to hear danger signals like a fire alarm or the horn of a motor car. If you are deaf, the world around you will be a silent one.

The ear can be divided into three parts — the **outer ear**, the **middle ear** and the **inner ear**. The part of the ear which we can see is known as the outer ear or **pinna**. It is shaped like a funnel. This shape helps it to collect sounds, which are then passed to the inner ear.



The outer ear is connected to the middle ear by a canal called the **ear canal**. At the end of the canal is a tightly stretched piece of skin called the **ear-drum**.

The middle ear lies on the inner side of the ear-drum. It contains three small bones — the **hammer**, the **anvil** and the **stirrup**. These are joined to each other in a chain.