

BASIC SCIENCE SERIES
自然科学初级读物

8

LIVING THINGS -MAN

生物——人

叶念伦 译



科学普及出版社

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出 版 说 明

当前，在实现四个现代化的新长征途中，广大青少年正在努力学习现代科学文化知识，为祖国的社会主义建设事业，增长才干，积蓄力量。编译出版《自然科学初级读物》的目的，就是为初学自然科学和英语的读者，提供一套浅近而有趣的参考书籍。

全套读物共有16个选题，细目见各书封底。英语部分采自 FEP INTERNATIONAL PRIVATE LIMITED 出版的 BASIC SCIENCE SERIES (修订版)。

为了便于阅读，对全书重新作了编排，绘制了插图，并附了参考译文。书中还配有相当数量的简单实验，使读者通过实验，加深理解有关科学内容。

由于编者水平所限，错误不当之处在所难免，请批评指正。

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BASIC SCIENCE SERIES — BOOK 8

自然科学初级读物——第8册

LIVING THINGS —MAN

生物——人

叶念伦
董元骥
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译校

插图



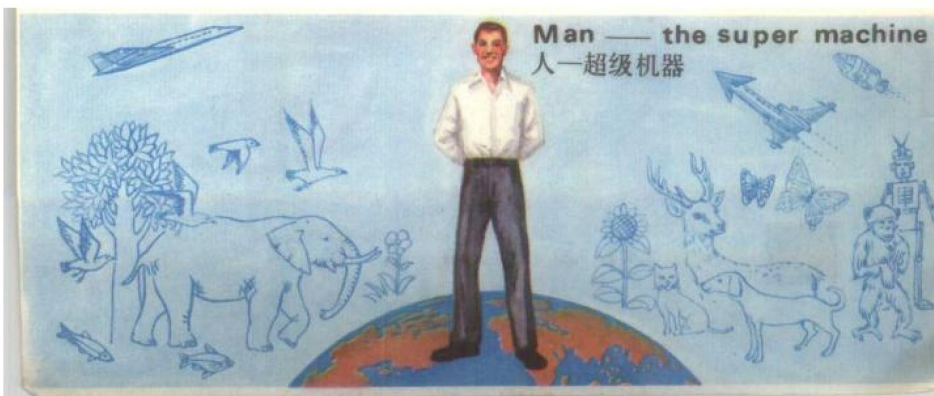
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INTRODUCTION

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.

引 言

人体是一部奇妙的机器。它具有的部件和能做工种，比世界上任何机器都多，任何机器都没有象眼睛、耳朵、心脏或大脑那样奇妙的部件。就是最先进的机器，也不能象人体那样地能生长、恢复损伤部位或繁殖。尤其重要的是：不同于任何机器或其它生物，人能思考、喜爱。这就是为什么我们说人是这个世界上最高级的生物。我们将在这本书中尽可能多学些有关奇妙的人体的知识。

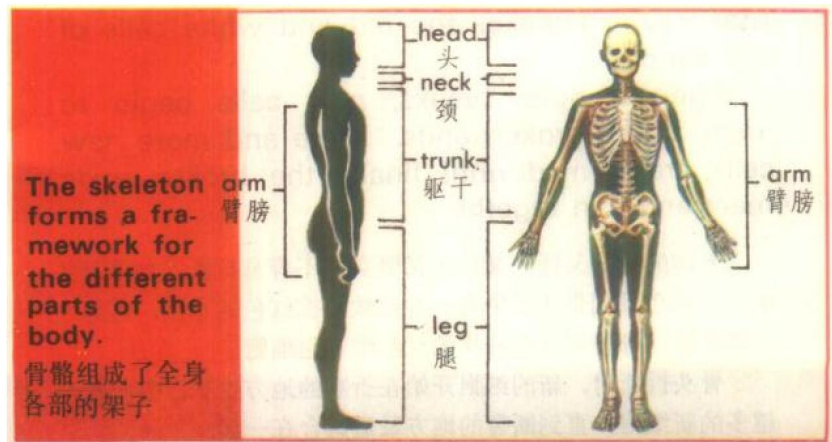


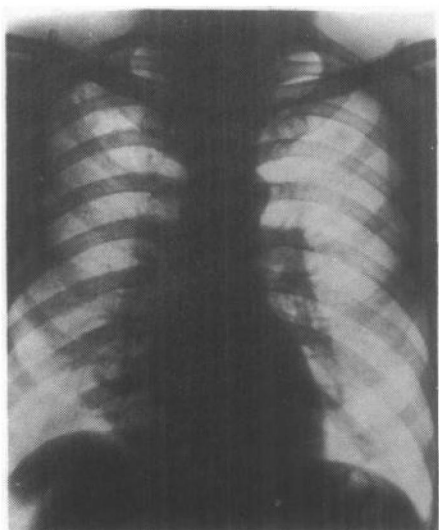
THE BONES

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.

骨 头

人体在很多方面是很相似的。人的相貌可能不完全一样，但体形大体相同。人体由好几部分组成——头、颈、躯干、臂和腿。这几个部分由一副叫做骨骼的架子连在一起。骨骼由骨头构成。人看不见自己的骨头，因为它们被肌肉和皮肤覆盖着。但能够感觉到骨头。





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

这是一张X光透视照片
你能看见肋骨吗？

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.

人体的骨头又硬、又白、又坚实，不容易折断。如果骨头断了，你会看到骨头当中有一种柔软的棕红色的东西，这部分叫做骨髓。骨髓制造血液里的红细胞和白细胞。

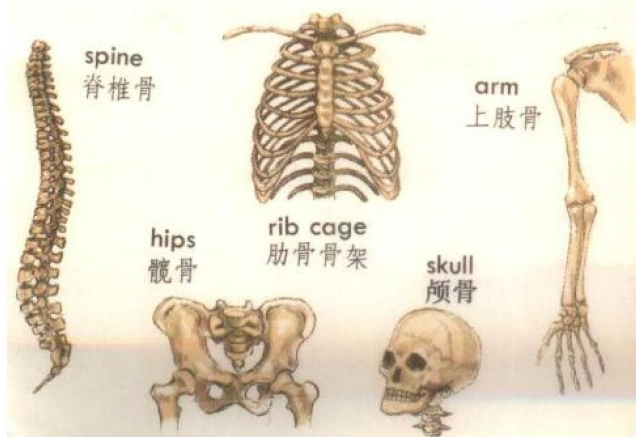
骨头折断时，新的细胞开始在折断的地方生长，生成越来越多的新细胞，直到断裂的地方最后愈合在一起。

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.

医生用X光机来检查骨头是否折断了。这种机器能够给人体的内部照相，照出来的相片叫做X光相片。以前你曾做过X光透视吗？上图是一张胸部的X光相片，可以清楚地看到肋骨。

支撑身体的主要骨头是**脊椎骨**或称**脊梁骨**，由一长列小骨头彼此连接而成。在颈部和躯干部才能找到脊椎骨。象鱼、蛙、蜥蜴、鸟和狗之类的动物，也都有脊椎骨。



What are the
uses of these
bone?

这些骨头起什么
作用？

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?

骨头不仅支撑身体，也用来保护重要的器官。颅骨保护大脑，肋骨保护肺和心脏，髋骨保护部分食物通道，脊梁骨保护脊髓。

人体中有不同类型的骨头。有的扁平，有的短，有的长，有的形状不规则。你能够说出这些骨头的名字来吗？

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.

关 节

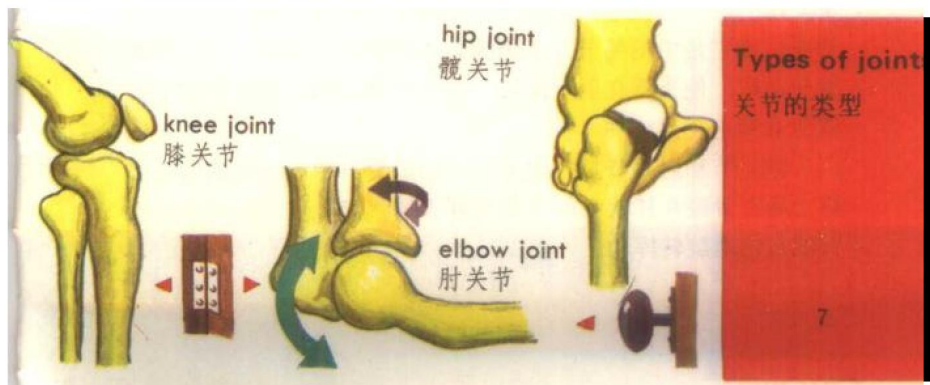
我们刚刚学习了一些骨头的知识。现在让我们来看看骨头是怎样活动的。人体能够做出几千种动作。这是因为人的骨头不是牢固地彼此连接在一起的。一根骨头和另一根骨头相连的地方形成关节。

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**.

身体里有两种关节，不动关节和动关节。不动关节可在颅骨内找到，颅骨的骨头在关节处嵌合得很紧，不能活动。

动关节使人体各部位可以自由活动。肘、膝、肩和髋关节是人体主要的动关节。人体有各种不同类型的动关节，主要的是屈戌关节、中枢关节和杵臼关节。



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?

膝关节是说明屈戌关节的好例子，它活动起来象一扇门的折叶，只能向后弯曲。肘关节部分是屈戌关节，部分是中枢关节。说它是屈戌关节，是因为它象膝关节那样只能向一个方向弯曲；说它是中枢关节，是因为它不象膝关节那样，它可以作旋转动作，使下臂在肘上旋转。如果你转动门上的球形握手，就会看到这一点。

髋关节和肩关节是杵臼关节。在肩关节中，上臂的圆头或称“球”骨嵌在杯状空间或称肩胛骨的“窝”里，使得你的手臂能自由地旋转挥动。

除了上面提到的各种关节外，你还知道人体内的其它关节吗？

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.

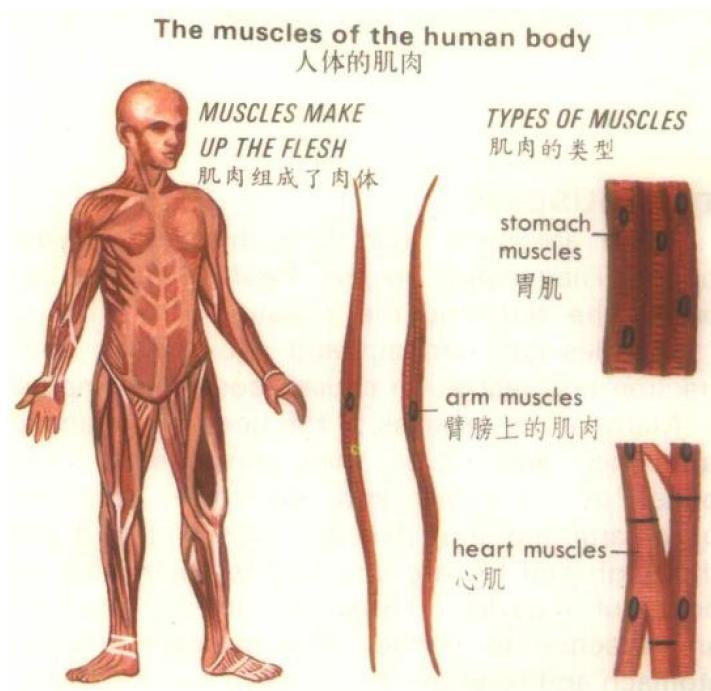
Many of the muscles of the body are attached to bones and cause their movements. The bones of the upper arm and lower arm, the upper arm and shoulder, the thigh and shin and the thigh and hip are attached to each other by powerful muscles. However, not all muscles are attached to bones. The muscles of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

肌 肉

人体内有六百多块肌肉，它们是由皮肤和骨骼之间的肉构成的。

肌肉能够收缩和放松。肌肉的收缩和放松使身体活动。

身上的许多肌肉都同骨头相连，并使骨头活动。上下臂的骨头、上臂和肩膀上的骨头、股骨和胫骨、股骨和髌骨都是由强有力的肌肉互相连接起来的。不过，并不是所有的肌肉都同骨头相连，胃和心脏的肌肉就偏于这类肌肉。



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?

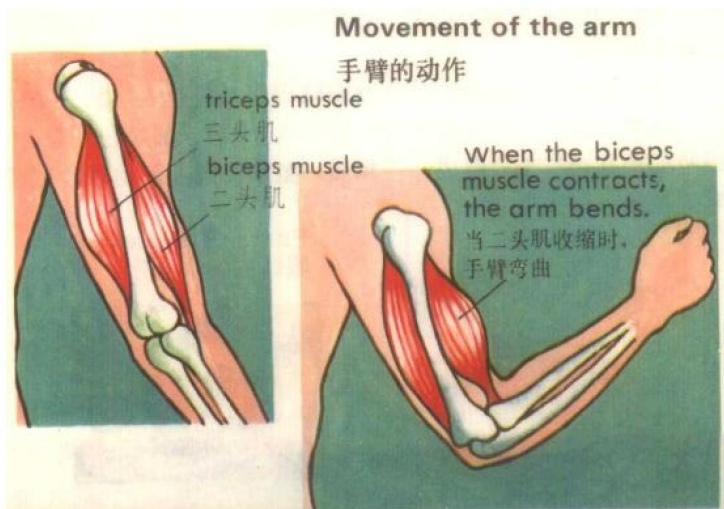
(b) Lift up a chair. Which of the body muscles move?

动手做

你能感觉到你的肌肉活动吗？你肯定能够感觉到。照下面所说的去做，看看你的肌肉是怎样活动的。

一、收紧你的上臂，让你的下臂上下活动。你感觉到肌肉在拉动吗？帮助你下臂活动的肌肉是三头肌和二头肌。当下臂向下动作时，是哪块肌肉在收缩？向上动作时，又是哪块肌肉在收缩？

二、提起一把椅子，身上的哪块肌肉在动作？



THE EYE

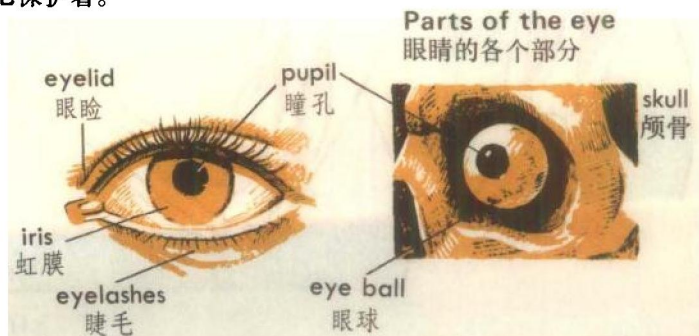
You use your eyes to see things around you. A blind man cannot do so. If you want to know what it is like to be blind, just blindfold yourself. You will find that the world is a dark and gloomy place.

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**.

眼 睛

你用眼睛看你周围的东西。盲人就做不到这一点。如果你想知道眼睛瞎了是怎么回事，就把眼睛蒙上，你会发现世界是个昏暗的所在。

使你能够看见东西的那部分眼睛仅仅是整个眼睛的一小部分。眼睛实际上差不多有乒乓球那么大。大部分都处在颅骨内。眼睛的前部由三部分组成——角膜、虹膜和瞳孔，由眼睑和睫毛保护着。

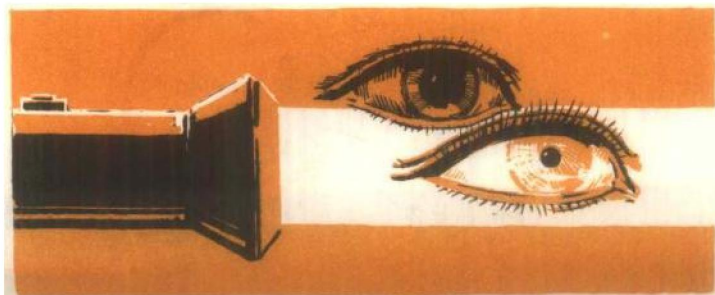


The cornea is a transparent white part which surrounds and covers the iris. The iris is the coloured part of the eye. It may be black, blue, brown or green in colour. It is actually a ring of muscles which can contract and relax. The pupil is a round opening in the middle of the iris. It is always black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

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

角膜是一种透明的白色体，覆盖着虹膜。虹膜就是眼睛中有颜色的那部分，可以是黑色的、蓝色的、棕色的或绿色的。虹膜实际上是一个可以收缩或放松的肌肉环。瞳孔是虹膜中间的一个圆孔，它总是黑色的。

如果光线太强，虹膜就放松，从而使瞳孔变小。这样，就只有一定量的光线能够通过瞳孔进入眼睛。如果光线太弱，虹膜就收缩，从而使瞳孔变大。这样，更多的光线就可以进入眼睛。



What happens to the eye when there is too much light? 光线太强时，眼睛会发生什么情况？

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 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.

A horizontal section of the eye

眼睛的平面剖视图

