

The Eye and How We See



 Prevent
Blindness
America

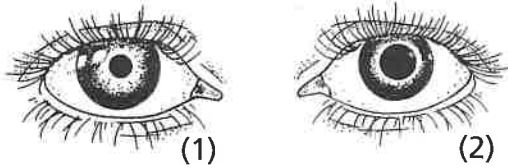
Introduction

Your eyes are wonderful sensory organs. They help you learn about the world. Your eyes see all sorts of things. They see things that are big and small, near and far away. They see colors and textures.

Your eyes constantly send information to your brain. Your brain processes this data in a fraction of a second, with the result that you see something.

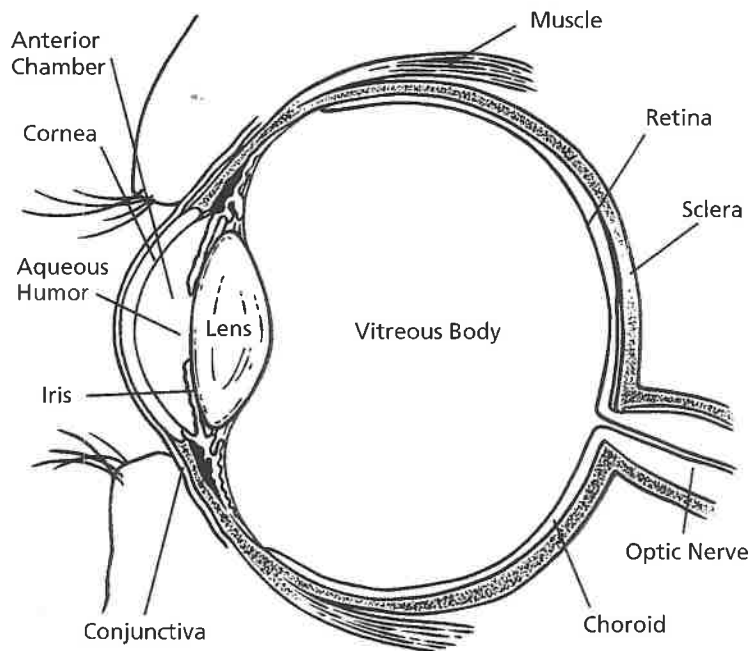
Light and Dark

The pupil is an opening in your eye that lets in light. It looks black because the eye is dark inside. To control the amount of light entering the eye, the pupil changes in size. In bright light your eye doesn't need as much light to see, so it shrinks (1). Your pupil gets bigger in dim light because it needs as much light as possible to see (2).



Inside the Eye

Many different parts of your eye must work together so that you can see. This diagram shows these main parts. If anything goes wrong, such as from an eye disease or eye injury, you might not be able to see as well again even after your eye heals.



Color

Rods and cones in the retina line the back of the eye and work together to help you see. Cones allow you to see colors and fine detail. They work best in bright light. Rods work best in dim light and are important for side (peripheral) vision.



Our One Purpose: Saving Sight

Founded in 1908, Prevent Blindness America is the nation's leading volunteer eye health and safety organization dedicated to fighting blindness and saving sight. Focused on promoting a continuum of vision care, Prevent Blindness America touches the lives of millions of people each year through public and professional education, advocacy, certified vision screening training, community and patient service programs and research.

These services are made possible through the generous support of the American public. Together with a network of affiliates, divisions and chapters, Prevent Blindness America is committed to eliminating preventable blindness in the United States. For more information, or to make a contribution to the sight-saving fund, call 1-800-331-2020 or visit us on the web at www.preventblindness.org.

National Office:

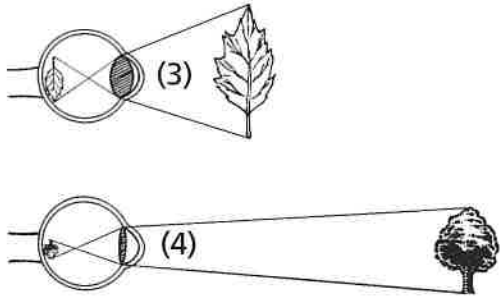
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Additional copies available for purchase.
The information in this brochure is subject to change.
Please call 1-800-331-2020 for more information.

TB10 12/05
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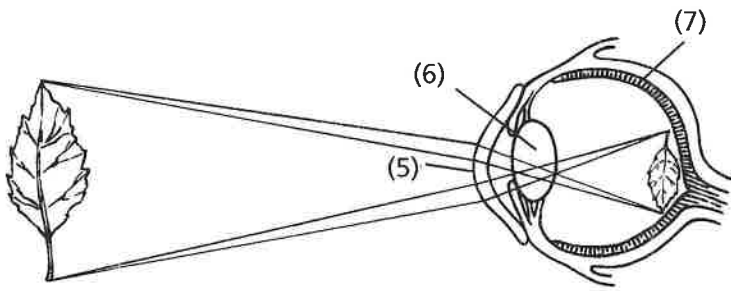
Near and Far

Muscles around the eye adjust the shape of the lens to focus on an object that is close or far away. The lens gets thicker when focusing on near objects (3), and thinner for distant objects (4). The size of the image reflected on the back of the eye also changes.



Upside Down

Light reflected from an object passes through the cornea (5). It moves through the lens, which focuses it (6). The image then reaches the retina at the very back of the eye (7). There it meets with a thin layer of color-sensitive cells called rods and cones.



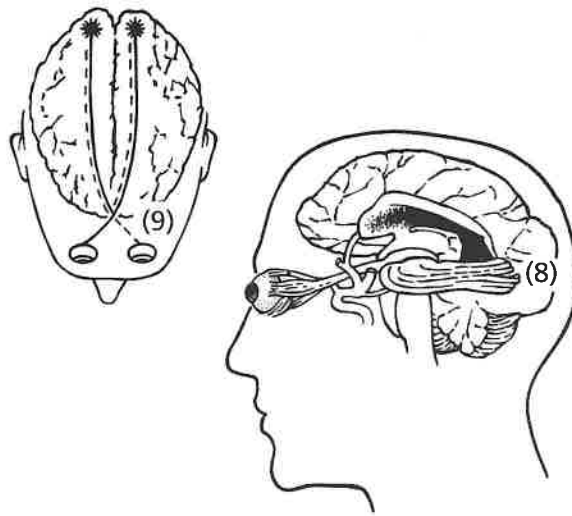
The Eye-Brain Connection

Your eyes send visual information to a special part of the brain to be processed and understood. This area of the brain is in the back of your head and is called the visual cortex (8).

A Complete Picture

Visual information travels from the eye to the brain through the optic nerve. Each eye has a slightly different view, so your brain must mix the two images it receives to get a complete picture. This happens on the way to the brain. Some fibers from the optic nerve in each eye cross over to the other pathway (9).

Light criss-crosses while it goes through the cornea, so your retina "sees" the image upside down. Your brain "reads" it rightside up.



Vision Vocabulary

Aqueous Humor

A clear, watery fluid that fills the front part of the eye between the cornea, lens and iris.

Choroid

The middle layer of the eyeball which contains veins and arteries that furnish nourishment to the eye, especially the retina.

Conjunctiva

A mucous membrane that lines the eyelids and covers the front part of the eyeball.

Cornea

The transparent outer portion of the eyeball that transmits light to the retina.

Iris

The colored, circular part of the eye in front of the lens. It controls the size of the pupil.

Lens

The transparent disc in the middle of the eye behind the pupil that brings rays of light into focus on the retina.

Optic Nerve

The important nerve that carries messages from the retina to the brain.

Pupil

The circular opening at the center of the iris that controls the amount of light let into your eye.

Retina

The inner layer of the eye containing light-sensitive cells that connect with the brain through the optic nerve.

Sclera

The white part of the eye that, along with the cornea, forms the outside protective layer of the eye.

Vitreous Body

A colorless mass of soft, gelatin-like material that fills the eyeball behind the lens.

Vision Tips

- Get regular eye exams!
- Wear helmets and sports eyewear!
- Wear your goggles when working with chemicals!
- Wear eye protection for mowing the lawn, heavy-duty cleaning and operating machinery!