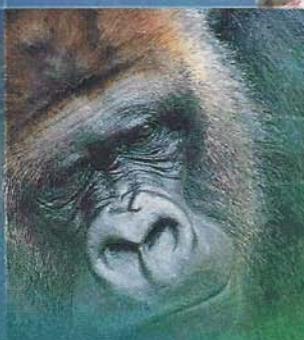
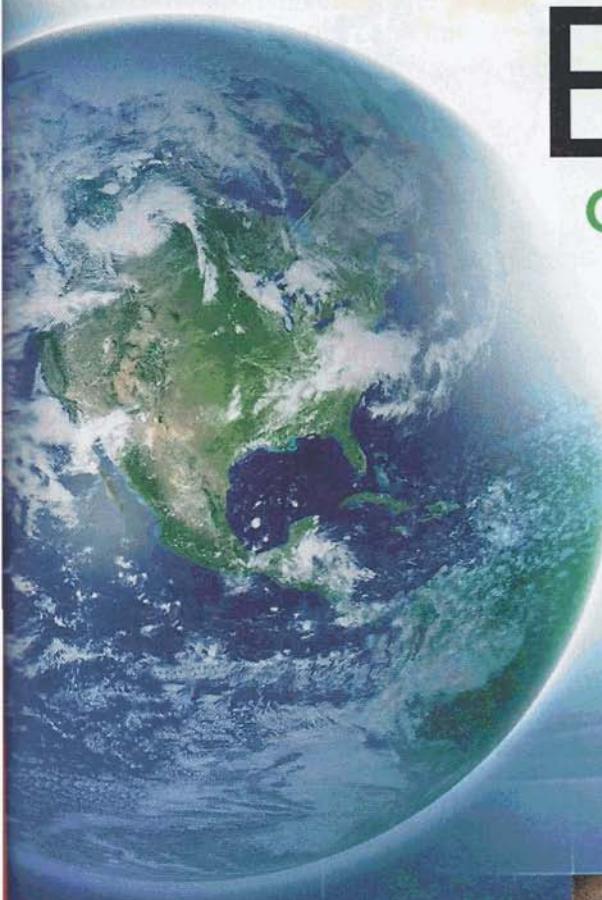


Awake!

FEBRUARY 2009

Earth designed for life

ALSO: IS YOUR FUTURE
PREDESTINED? PAGE 12



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Everything about planet Earth indicates that it was made to support life. Is this situation just an incredible fluke, or does it reflect purposeful design? What do science and the Bible tell us?



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How Can I Get Over a Breakup?

When one member of a courting couple ends the relationship, the other may feel devastated. See how to deal with this difficult situation.



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The Living Planet

PLANET Earth hosts a prodigious amount and variety of living organisms—perhaps many millions of species. Much of this life, which thrives in the soil, the air, and the water, is too small for the naked eye to see. For example, just one gram (0.04 ounces) of soil has been found to host 10,000 *species* of bacteria, not to mention the total number of microbes! Some species have been found up to two miles underground!

The atmosphere too is packed with life—and this does not mean just birds, bats, and insects. Depending on the time of year, it is also filled with pollen and other spores, as well as seeds and—in certain areas—thousands of different kinds of microbes. “This puts the diversity of microbes in the air on par with the diversity of microbes in the soil,” says *Scientific American* magazine.

Meanwhile, the oceans remain largely a mystery because in order to study the watery deep, scientists often have to use costly technology. Even coral reefs, which are relatively accessible and are well-surveyed, may host millions of yet unknown species.

What we do know, though, is that planet Earth hosts so much life that as a result, life actually changes chemical properties of the planet, particularly its biosphere—the part of the earth where life exists. In the oceans, for example, the calcium carbonate in shells and

coral helps to stabilize the chemistry of the water “much the same as an antacid works in the stomach,” says a report by the U.S. National Oceanic and Atmospheric Administration. Plants and phytoplankton—single-celled algae found near the surface of lakes and oceans—help to regulate carbon dioxide and oxygen levels in water and air. And in the soil, bacteria and fungi work as decomposers, providing inorganic nutrients for plants. Yes, earth has rightly been called the living planet.

Yet, terrestrial life could not exist were it not for some extremely fine tuning in a number of areas, some of which were not fully grasped until the 20th century. That fine-tuning includes the following:

1. Earth's location in the Milky Way galaxy and the solar system, as well as the planet's orbit, tilt, rotational speed, and moon
2. A magnetic field and atmosphere that serve as a dual shield
3. An abundance of water
4. Natural cycles that replenish and cleanse the biosphere

As you consider these topics in the articles that follow, ask yourself: ‘Are earth's features a product of blind chance or of intelligent design? If the latter, what was the Creator's purpose in forming the earth?’ The final article of this series will discuss that question.

“WE CANNOT ALLOW A DIVINE FOOT IN THE DOOR”

Despite the evidence that the natural world seems too well designed to be a mindless accident, many scientists refuse to believe in a Creator. It is not that science somehow compels atheists to “accept a material explanation” of the world, says evolutionist

Richard C. Lewontin. Rather, he says, it is their “prior commitment . . . to materialism,” their determination to create “a set of concepts that produce material explanations.” “That materialism,” he adds, speaking for scientists in general, “is absolute, for we can-

not allow a Divine Foot in the door.”

Is such dogmatism wise, especially if the evidence overwhelmingly points to a Creator? What do you think?
—Romans 1:20.

Earth's Perfect "Address"

OUR address often includes our country, city, and street. By way of comparison, let's call the Milky Way galaxy earth's "country," the solar system—that is, the sun and its planets—earth's "city," and earth's orbit within the solar system earth's "street." Thanks to advances in astronomy and physics, scientists have gained deep insights into the merits of our tiny spot in the universe.

To begin with, our "city," our solar system, is in a part of the Milky Way that many scientists call the *galactic habitable zone*. This zone is about 28,000 light years from the center of the galaxy and contains just the right concentrations of the chemical elements needed to support life. Farther out, those elements are too scarce; farther in, the neighborhood is too dangerous because of the greater abundance of potentially lethal radiation and other factors. "We live in prime real estate," says *Scientific American* magazine.

The Ideal "Street"

No less "prime" is earth's "street," or orbit within our solar system "city." About 93 million miles from the sun, this orbit is in what scientists call the *circumstellar habitable zone*, where life neither freezes nor fries. Moreover, earth's path is almost circular, keeping us roughly the same distance from the sun year-round.

The sun, meanwhile, is the perfect "powerhouse." It is stable, it is the ideal size, and it emits just the right amount of energy. For good reason, it has been called "a very special star."

The Perfect Neighbor

If you had to choose a "next-door neighbor" for the earth, you could not improve on the moon. Its diameter measures just over a quarter of the earth's. Thus, when compared with other moons in our solar system, our moon is unusually large in relation to its host planet. This, however, is no coincidence.

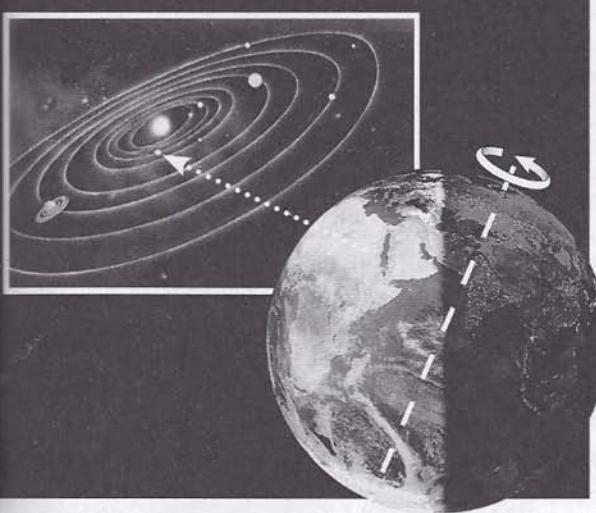
For one thing, the moon is the principal cause of ocean tides, which play a vital role in the planet's ecology. The moon also contributes to earth's stable spin axis. Without its tailor-made moon, our planet would wobble like a spinning top, perhaps even tipping right over and turning on its side, as it were!

Awake!®

THIS JOURNAL IS PUBLISHED for the enlightenment of the entire family. It shows how to cope with today's problems. It reports the news, tells about people in many lands, examines religion and science. But it does more. It probes beneath the surface and points to the real meaning behind current events, yet it always stays politically neutral and does not exalt one race above another. Most important, this magazine builds confidence in the Creator's promise of a peaceful and secure new world that is about to replace the present wicked, lawless system of things.

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The resulting climatic, tidal, and other changes would be catastrophic.

Earth's Perfect Tilt and Spin

Earth's tilt of 23.5 degrees causes the annual cycle of seasons, moderates temperatures, and enables a wide range of climate zones. "Our planet's tilt axis seems to be 'just right,'" says the book *Rare Earth—Why Complex Life Is Uncommon in the Universe*.

Also just right is the length of day and night, a result of earth's spin. If the rotation period were substantially longer, the side of the earth facing the sun would bake while the other froze. Conversely, if days were shorter, perhaps just a few hours long, earth's rapid spin would cause relentless gale-force winds and other harmful effects.

Yes, everything about our planet—from its "address" to its rate of spin to its lunar neighbor—gives evidence of thoughtful design by a

Languages: Afrikaans, Albanian, Amharic, Arabic, Armenian, Bislama, Bulgarian, Cebuano, Chichewa, Chinese, Chinese (Simplified), Chitonga, Cibemba, Croatian, Czech, Danish, Dutch, English, Estonian, Ewe, Fijian, Finnish, French, Georgian, German, Greek, Gujarati, Hiligaynon, Hindi, Hungarian, Icelandic, Igbo, Iloko, Indonesian, Italian, Japanese, Kannada, Kirghiz, Korean, Latvian, Lingala, Lithuanian, Luvale, Macedonian, Malagasy, Malayalam, Maltese, Myanmar, Norwegian, Polish, Portuguese, Punjabi, Rarotongan, Romanian, Russian, Samoan, Sepedi, Serbian, Sesotho, Shona, Silozi, Sinhala, Slovak, Slovenian, Spanish, Swahili, Swedish, Tagalog, Tamil, Thai, Tok Pisin, Tongan, Tsonga, Tswana, Turkish, Ukrainian, Urdu, Vietnamese, Xhosa, Yoruba, Zulu

ARE YOU GOING FASTER THAN A BULLET?

By the time you finish reading this box, you will have traveled thousands of miles—and without any bumps! Consider the following.

The earth is 25,000 miles in circumference and rotates once every 24 hours. Thus, points at or near the equator move at about 1,000 miles an hour. (The poles, of course, just spin on the spot.)

The earth itself orbits the sun at 18.5 miles a second, while the solar system as a whole travels around the hub of the Milky Way at an astonishing 155 miles a second. Bullets, by comparison, travel at less than a mile a second.

wise Creator.* Says physicist and evolutionist Paul Davies: "Even atheistic scientists will wax lyrical about the scale, the majesty, the harmony, the elegance, the sheer ingenuity of the universe."

Could such ingenuity be a product of chance, or does it reflect purposeful design? Think about that question as you read the next short article, which discusses two amazing shields that protect life on earth from threats originating in space.

* Essential to the existence of the universe as a whole are the four fundamental forces that govern matter: gravity, electromagnetism, and the strong and weak nuclear forces. All are marvelously fine-tuned.—See chapter 2 of the book *Is There a Creator Who Cares About You?* published by Jehovah's Witnesses.

Would you welcome more information or a free home Bible study? Please send your request to Jehovah's Witnesses, using one of the addresses below. For a complete list of addresses, see www.watchtower.org/address. **America, United States of:** 25 Columbia Heights, Brooklyn, NY 11201-2483. **Australia:** PO Box 280, Ingleburn, NSW 1890. **Bahamas:** PO Box N-1247, Nassau, NP. **Britain:** The Ridgeway, London NW7 1RN. **Canada:** PO Box 4100, Georgetown, ON L7G 4Y4. **Germany:** 65617 Selters. **Guam:** 143 Jehovah St, Barrigada, GU 96913. **Guyana:** 352-360 Tyrell St, Republic Park Phase 2 EBD. **Hawaii:** 2055 Kamehameha IV Road, Honolulu, HI 96819-2619. **Jamaica:** PO Box 103, Old Harbour, St. Catherine. **Japan:** 4-7-1 Nakashinden, Ebina City, Kanagawa-Pref, 243-0496. **Puerto Rico:** PO Box 3980, Guayanabo, PR 00970. **South Africa:** Private Bag X2067, Krugersdorp, 1740. **Trinidad and Tobago:** Lower Rapsey Street & Laxmi Lane, Curepe.

* Audiocassettes also available.

+ CD also available.

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◦ Audio recordings also available at www.jw.org.

Earth's Dynamic Shields

SPACE is a dangerous place filled with lethal radiation and meteoroids. Yet, our blue planet seems to fly through this galactic "shooting gallery" with relative impunity. Why? Because earth is protected by amazing armor—a powerful magnetic field and a custom-made atmosphere.

Earth's magnetic field originates deep inside the planet and stretches far into space, where it forms an invisible shield called the *magnetosphere* (shown at right). This shield protects us from the full force of cosmic radiation and from dangers emanating from the sun. The latter include the solar wind, which is a steady stream of energetic particles; solar flares, which release in minutes as much energy as billions of hydrogen bombs; and coronal mass ejections (CMEs), which blast billions of tons of matter from the sun's corona into space. Both solar flares and CMEs trigger intense auroras (shown lower right), colorful displays of light visible in the upper atmosphere near earth's magnetic poles.

Earth's atmosphere provides additional protection. An outer layer of the atmosphere, the *stratosphere*, contains a form of oxygen called ozone, which absorbs up to 99 percent of incoming ultraviolet (UV) radiation. Thus, the ozone layer helps to protect many forms of life, including humans and plankton, from dangerous radiation. Interestingly, the amount of stratospheric ozone is not fixed but is directly proportional to the intensity of UV radiation, making the ozone layer a dynamic, efficient shield. ►

The Liquid of Life

WATER is an enigma. It is both simple and complex. Each molecule comprises just three atoms—two of hydrogen and one of oxygen. Yet, scientists still do not fully understand how water molecules work. What we all know, though, is that water is essential to life, making up about 80 percent by weight of all living things. Consider just five attributes of this amazing substance.

1. Water can store a lot of heat without a substantial rise in temperature, thus helping to moderate climate.

2. Water expands when it freezes, causing ice to float and form an insulating layer. If, like other substances, water became more dense as it froze, the lakes, the rivers, and the seas would solidify from the bottom up, entombing everything in ice!

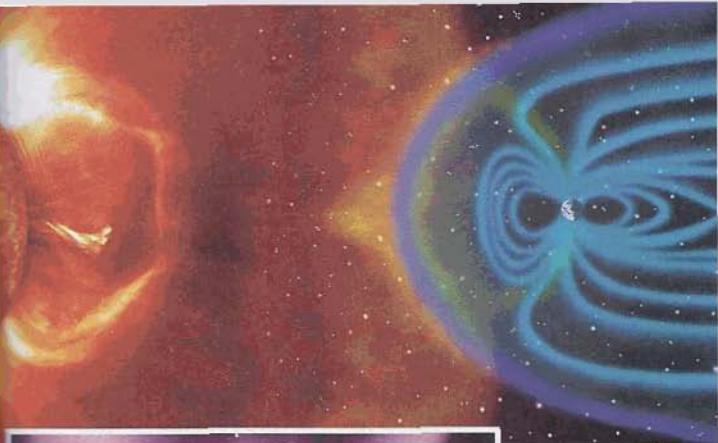
3. Water is highly transparent, enabling light-dependent organisms to survive at considerable depths.

4. Water molecules produce surface tension, creating an elastic "skin." This tension enables insects to scamper about on a pond, causes water to form into droplets, and contributes to the capillary effect, which helps water to hydrate the tallest plants.

5. Water is the most efficient solvent known. It is able to carry in solution oxygen, carbon dioxide, salts, minerals, and many other vital substances.

Essential to Earth's "Air Conditioner"

Oceans cover about 70 percent of the earth, giving them a major role in climate control. Indeed, oceans and atmosphere are practically one, constantly exchanging heat, water, gases, and momentum in the form of wind and waves. They also work together carrying solar heat away from the Tropics toward the poles, thus moderating global tempera-



tures. In fact, for most organisms to survive, temperatures must stay within the range that allows water to remain a liquid. "It appears that Earth got it just right," says the book *Rare Earth—Why Complex Life Is Uncommon in the Universe*.

Of course, the earth is an effect, not a cause. But was the cause chance, or was the cause a wise and loving Creator? The Bible says the latter. (Acts 14:15–17) In the following article, we shall see how the Bible's view is supported by additional evidence—amazing cycles that keep our planet clean and healthy.

The atmosphere also protects us from a daily barrage of millions of meteoroids, ranging in size from tiny particles to boulders. Fortunately, by far the majority of these burn up in the atmosphere, becoming bright flashes of light called meteors.

Earth's shields do not block radiation that is essential to life, such as heat and visible light. The atmosphere even helps to distribute the heat around the globe, and at night the atmosphere acts as a blanket, slowing the escape of heat.

Earth's atmosphere and magnetic field truly are marvels of design that are still not fully understood. The same could be said of another terrestrial phenomenon—earth's abundance of water in its liquid form.

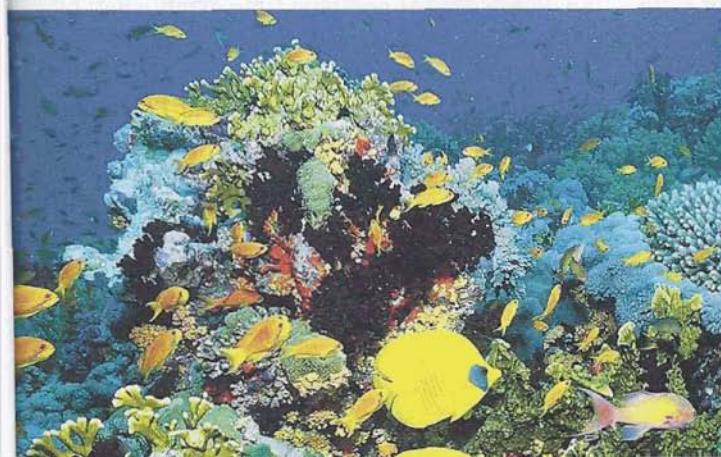
THE BIBLE IS SCIENTIFICALLY ACCURATE

The earth is suspended in space. “He is stretching out the north over the empty place, hanging the earth upon nothing.”—Job 26:7, stated about 1613 B.C.E.

The earth is round. “There is One who is dwelling above the circle of the earth.”—Isaiah 40:22, written about 732 B.C.E.

Water moves in a cycle. “All the winter torrents are going forth to the sea . . . To the place where the winter torrents are going forth, there they are returning so as to go forth.”—Ecclesiastes 1:7, written before 1,000 B.C.E.

The universe is governed by laws. “I [Jehovah] had appointed . . . the statutes [or, laws] of heaven and earth.”—Jeremiah 33:25, written before 580 B.C.E.



Cycles for Life

If a city's supply of fresh air and water were cut and its sewers blocked, disease and death would soon follow. Yet, our planet is a closed system—clean air and water are not shipped in from outer space, nor is waste matter rocketed out! So how does earth's biosphere remain healthy and habitable? The answer: natural cycles, such as the water, carbon, oxygen, and nitrogen cycles, here explained and shown simplified.

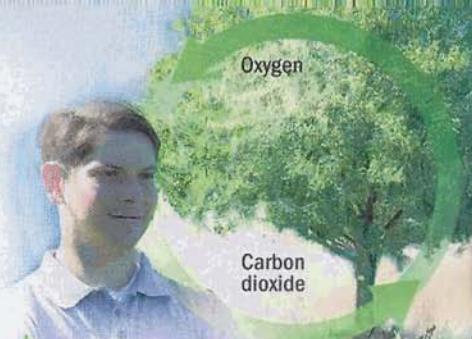
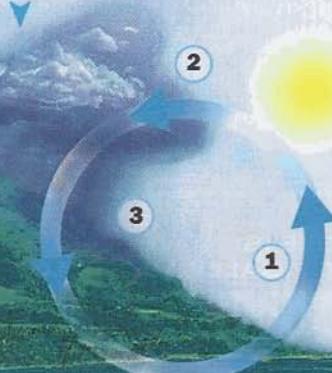
The water (hydrologic) cycle involves three stages.

1. Solar power lifts water into the atmosphere by evaporation.

2. Condensation of this purified water produces clouds.

3. Clouds, in turn, form rain, hail, sleet, or snow, which fall to the ground, closing the loop.

How much water is thus recycled annually? According to estimates, enough to cover the entire surface of the planet to a depth of more than three feet.



The carbon and oxygen cycles involve two key processes—photosynthesis and respiration.* Photosynthesis uses sunlight, carbon dioxide, and water to produce carbohydrates and oxygen. Respiration, which occurs in animals and humans, combines carbohydrates and oxygen to produce energy, carbon dioxide, and water. Thus, the output of one cycle is the input of the other, and it all happens cleanly, efficiently, and quietly. ►

* The cycles of various chemical elements may combine or overlap. Oxygen, for example, is present in carbon dioxide, carbohydrates, and water. Hence, it shares in both the carbon and the water cycles.

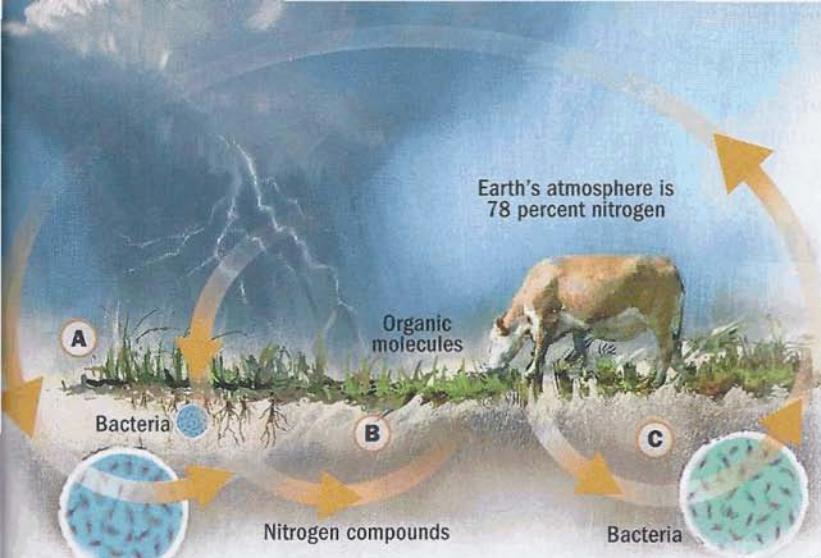
A Special Provision for Humankind

HUMANS need more than air, food, and water. To be truly happy, we have to satisfy our spiritual need. We need to know the purpose of life, why we are here. Hence, Jesus Christ said: “Happy are those conscious of their spiritual need.”—Matthew 5:3.

God has enabled us to satisfy that need by means of the most widely distributed sacred book in the world, the Holy Bible, now available in whole or in part in some 2,400 languages. (2 Timothy 3:16) The Bible tells us that God created the universe and all life on earth. (Genesis, chapters 1 and 2) It even

tells us that he divided his creative activity into six figurative “days,” or periods of time, the order of which harmonizes with the principal divisions of geologic time established by scientists.

The Bible also reveals God’s purpose for mankind. That purpose is stated at Psalm 37:29: “The righteous themselves will possess the earth, and they will reside forever upon it.” Note that the righteous—the morally and spiritually upright—will live forever, not in heaven, but on the earth. Of course, the earth will not be the polluted



The nitrogen cycle is essential to the production of amino acids, proteins, and other organic molecules. **A.** The cycle begins when lightning and bacteria convert atmospheric nitrogen into compounds that can be absorbed by plants. **B.** Plants, in turn, incorporate these compounds into organic molecules. Animals that eat plants thus also acquire nitrogen. **C.** When plants and animals die, another family of bacteria break down the nitrogen compounds, releasing nitrogen back into the soil and the atmosphere.

Perfect Recycling!

Consider: Humans, with all their technology, create countless tons of unrecyclable toxic waste annually. Yet, the earth recycles *all* its wastes perfectly, using ingenious chemical engineering. "Chance processes alone almost certainly could never have duplicated" such environmental harmony, says religion and science writer M. A. Corey.

Giving credit where it is due, the Bible says: "How many your works are, O Jehovah! All of them in wisdom you have made." (Psalm 104:24) That wisdom has been manifest in a special way toward humankind.

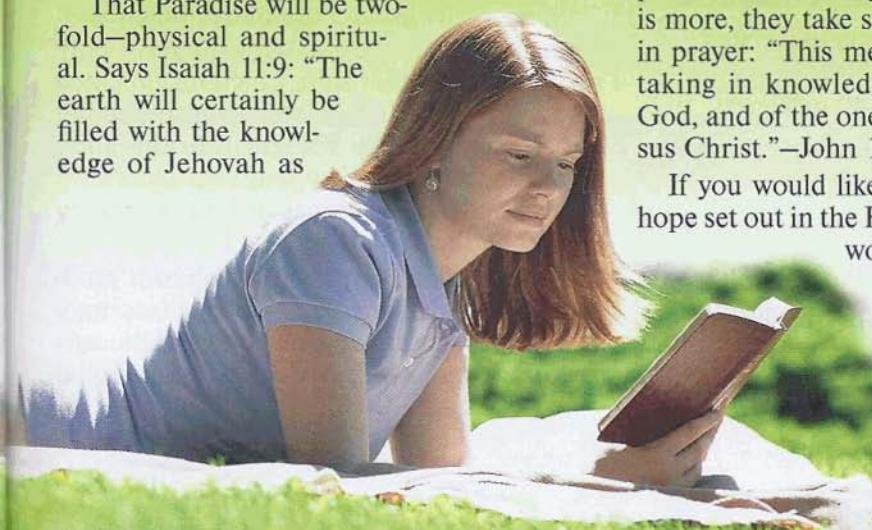
planet it is today. Rather, it will become a global paradise.—Psalm 104:5; Luke 23:43.

Knowledge That Leads to Life

That Paradise will be two-fold—physical and spiritual. Says Isaiah 11:9: "The earth will certainly be filled with the knowledge of Jehovah as

the waters are covering the very sea." Inscribed on human hearts, that knowledge even now impels true Christians to live in peace and harmony with one another. What is more, they take seriously Jesus' words said in prayer: "This means everlasting life, their taking in knowledge of you, the only true God, and of the one whom you sent forth, Jesus Christ."—John 17:3.

If you would like to learn more about the hope set out in the Bible, Jehovah's Witnesses would be delighted to help you free of charge.*



* You may also contact Jehovah's Witnesses at the Web site www.watchtower.org.

When Birds Crash Into Buildings

ALTHOUGH it was day-time, the woodpecker flew straight into a skyscraper and plummeted to the ground. The bird did not see the glass. A kind pedestrian found the dazed bird and watched over it, hoping that it would revive. His hopes were soon realized when the bird chirped, stood up, ruffled its feathers, and flew away.*

Sadly, not all birds survive such collisions unharmed. In fact, of those that fly into houses,

* Injured birds may be dangerous to handle, for they do not know that you are trying to help them. Also, some birds carry diseases that can be transmitted to humans. So if you want to help an injured bird, wear gloves and wash your hands afterward. If you have concerns about risks to your own health or safety, do not go near the bird. If circumstances warrant it, you could call for professional help.

WHERE HAVE ALL THE BIRDS GONE?

Estimates of annual human-associated bird deaths in the United States

- Communication towers—40 million
- Pesticides—74 million
- House cats and feral cats
—365 million
- Glass windows
—100 million to 1 billion
- Loss of habitat—unknown, but possibly the most harmful factor



Each year in the United States, at least 100 million birds die after crashing into windows

es, about half die. Studies indicate that in the United States alone, more than 100 million birds die annually after crashing into buildings of various kinds, says the Audubon Society. And some researchers believe that the figure may be closer to a billion! Why, though, do birds fly into buildings? And can anything be done to make their life on the wing safer?

The Killers—Glass and Light

Glass spells *danger* for birds. When windows are clean and clear, birds often see only what is on the other side, which may include greenery and sky. As a result, unsuspecting birds sometimes fly straight into the glass at full speed. Also, they may see decorative plants inside glass lobbies or homes and try to land on them.

Coated reflective glass can also be a problem. Under certain conditions, birds may see, not the glass, but a reflection of the surrounding area or sky and, here again, come

to grief. Birds have even been killed by glass at visitors' centers and on observation towers at bird sanctuaries and wildlife refuges! Ornithologist and biology professor Dr. Daniel Klem, Jr., believes that more birds are killed by flying into windows than by any other cause related to human activity, except perhaps habitat destruction.

Some birds are especially vulnerable to crashes. Most migratory songbirds, for example, fly toward their destination at night and navigate, at least in part, by the stars. As a result, they may become confused by bright lights on tall buildings. Indeed, some birds have become so disoriented that they have flown around aimlessly until they dropped from exhaustion. Another danger occurs during nights of rain or high cloud cover. On such occasions, birds tend to fly at lower altitudes, which increases their risk of crashing into tall buildings.

The Impact on Bird Populations

Just one tall building in Chicago, Illinois, U.S.A., caused an average of about 1,480 known deaths during migration season, according to one report. Thus, over a period of 14 consecutive years, that one building caused the death of some 20,700 birds. Of course, the total number of bird strikes was no doubt much higher. Moreover, these birds "are not the pigeons, gulls, or geese," says Michael Mesure, director of the Fatal Light Awareness Program of Toronto, Canada, but "birds with endangered populations."

For example, in Australia in one recent year, glass killed about 30 swift parrots, of which only 2,000 remain. In the United States, many museum specimens of Bachman's warbler, now possibly extinct, were gathered from collisions with one particular lighthouse in Florida.

Of the birds that survive building strikes, many are injured or weakened. This can be especially hazardous for migratory birds. If they are hurt and come down within a con-

centration of buildings, they may die of hunger or predation by other animals, some of which have learned to exploit this occasional food source.

Can Buildings Be Made Bird Friendly?

For birds to avoid flying into glass, they need to see it and recognize it as a solid object. To that end, some homeowners have sacrificed their view somewhat by attaching decals, stickers, or other readily visible matter to the outside of windows subject to bird strikes. According to Klem, the important thing is, not the drawings or the stickers themselves, but the spacing. His research suggests that visual cues should be no more than two inches apart horizontally and four inches vertically.

What can be done to help night-flying migratory birds? "Nocturnal collision with buildings . . . is largely preventable with the flick of a switch," says ecological research consultant Lesley J. Evans Ogden. In some cities, decorative lights on skyscrapers are now being dimmed or turned off at a set hour of the night, especially during bird-migration season. In other instances, netting has been placed on windows of tall buildings so that birds do not mistake reflections for sky.

Such measures may reduce the death toll by as much as 80 percent, saving millions of birds annually. But the basic problem likely will not go away, for people love lights and glass. Hence, organizations devoted to the welfare of birds, such as the Audubon Society, are attempting to persuade architects and developers to be more sensitive to the needs of the natural world.

IN OUR NEXT ISSUE

- Is Money Your Master or Your Servant?
- Should You Object to Cremation?
- Childhood Obesity—What Can Be Done?

Is Your Future Predestined?

Many people believe that their life and future are predestined by a higher power. They feel that from conception to death, we all follow a script already written in the mind of God. 'After all,' they say, 'God is all-powerful and all-knowing, or omniscient, so surely he must know every detail about the past, the present, and the future.'

WHAT do you think? Does God foreordain our life course and ultimate destiny? In other words, is free will genuine or just an illusion? What does the Bible say?

Total or Selective Foreknowledge?

The Bible leaves us in no doubt as to God's having foreknowledge. He knows "from the beginning the finale," says Isaiah 46:10. He even used human secretaries to record many prophecies. (2 Peter 1:21) What is more, those prophecies always come true because God has both the wisdom and the power to fulfill them in every detail. Hence, God can not only foreknow but also foreordain events whenever he chooses to do so. However, does God foreordain the destiny of every human or even the total number who will gain salvation? Not according to the Bible.

The Bible teaches that God is selective when it comes to foreordaining the future. For example, God foretold that "a great crowd" of righteous humans would survive

the destruction of the wicked at the end of the present system of things. (Revelation 7:9, 14) Note, though, that God did not give a specific number for that great crowd. The reason? He does not predestinate individuals. God is like the loving father of a large family. He knows that at least *some* of His children will reciprocate His love, but He does not predetermine the number.

Compare God's use of foreordination with the way he uses his power. As the Almighty, God has absolute power. (Psalm 91:1; Isaiah 40:26, 28) But does he use his power in an uncontrolled manner? No. For instance, he held back from acting against Babylon, an enemy of ancient Israel, until the time was right. "I kept exercising self-control," God said. (Isaiah 42:14) The same principle applies to his use of foreknowledge and foreordination. Jehovah exercises self-control in order to respect the free will that he gave us.

God's control of his powers does not limit



him or render him imperfect. In fact, it magnifies his greatness, and it endears him to us, for it shows that his sovereignty truly is exercised not only with omniscience and power but also with love and respect for the free will of his intelligent creation.

On the other hand, if God predetermines everything, including every nasty accident and vile deed that has ever happened, could we not rightly blame him for all the misery and suffering in the world? Thus, upon closer inspection, the teaching of predestination does not honor God, but casts a pall over him. It paints him as cruel, unjust, and unloving—the very opposite of what the Bible says about him.—Deuteronomy 32:4.

The Choice Is Yours

By means of his servant Moses, God said to the nation of Israel: “I have put life and death before you, . . . and you must choose life . . . by loving Jehovah your God, by listening to his voice and by sticking to him; for he is your life and the length of your days.” (Deuteronomy 30:19, 20) Had God predestinated each Israelite either to love him and gain life or to disregard him and merit death, His words would have been both meaningless and insincere. Do you believe that God, “a lover of justice” and the very personification of love, would act in such an arbitrary way?—Psalm 37:28; 1 John 4:8.

God’s appeal to his servants to choose life applies even more so to us today, for the fulfillment of Bible prophecy indicates that we are rapidly approaching the end of

the present system of things. (Matthew 24:3-9; 2 Timothy 3:1-5) How do we choose life? We do so in essentially the same way as the ancient Israelites did.

How Can You “Choose Life”?

We choose life by “loving Jehovah,” by “listening to his voice,” and by “sticking to him.” Of course, we can only do these things when we know God as a person and understand his requirements for us. In prayer to God, Jesus Christ said: “This is eternal life, *to know you*, the only true God, and him whom you have sent—Jesus Christ.”—Italics ours; John 17:3, Phillips.

That precious knowledge can be found in the pages of the Holy Bible, rightly called

The Bible teaches that God is selective when it comes to foreordaining the future

the Word of God. (John 17:17; 2 Timothy 3:16) Indeed, this spiritual gift is a tangible evidence that God has not predestined our future but wants us to make informed choices based on information he has provided.—Isaiah 48:17, 18.

By means of the Bible, God is, in effect, saying to us: “This is my purpose for mankind and the earth, and this is what you should do to gain everlasting life. It is now up to you to decide whether to listen to me or disregard me.’ Yes, how perfectly God balances his powers of foreordination with his respect for our free will! Will you choose life “by listening to [God’s] voice and by sticking to him”?

HAVE YOU WONDERED?

- To what extent does God exercise foreknowledge?
—Deuteronomy 30:19, 20; Isaiah 46:10.
- Why would God not predetermine everything, including the bad things that happen to people?—Deuteronomy 32:4.
- What will ultimately determine our future?—John 17:3.

mars UP CLOSE

In August 2003, Mars came within 35 million miles of our home planet, its closest approach in nearly 60,000 years. On the astronomical scale, that put the red planet practically in our backyard, much to the delight of sky watchers.

By early 2004, a number of spacecraft had converged on Mars. Some studied the planet from its surface, and others from orbit. What have these missions taught us about our planetary neighbor?

Surveying the Red Planet

The orbiter Mars Global Surveyor arrived at Mars in 1997. It discovered that Mars once had a strong magnetic field. The orbiter also accurately mapped the topography of Mars, revealing, among other things, that the distance from the lowest spot on the surface of the planet to the highest exceeds 18 miles, compared with just over 12 miles for the earth.*

The lowest spot on Mars is in the vast Hellas basin, which was evidently formed by the impact of a gigantic asteroid. The highest point is the summit of the immense, 13-mile-high volcano Olympus Mons. A camera onboard Surveyor also recorded boulders that appeared to be more than 60 feet across, as well as large shifting fields of sand dunes and freshly carved gullies. Another instrument determined that most surface rocks are of volcanic origin.

Although in November 2006 communication with Mars Global Surveyor was lost, three orbiters—the 2001 Mars Odyssey, the Mars Express, and the Mars Reconnaissance Orbiter—continued their surveillance of the

red planet.* Using more-sensitive cameras and detectors, they examined the Martian atmosphere and space environment and even discovered and mapped abundant ice at the planet's north pole.

This ice is a focus of the Phoenix Mars Lander, which dropped down flawlessly on the red planet on May 25, 2008. The Lander is equipped with highly advanced instruments to analyze both the atmosphere and the permafrost at the polar region. Scientists hope to learn whether the icy soil has ever supported microbial life. However, the search for life—or at least conditions favorable to it—had begun earlier.

The Rovers Spirit and Opportunity

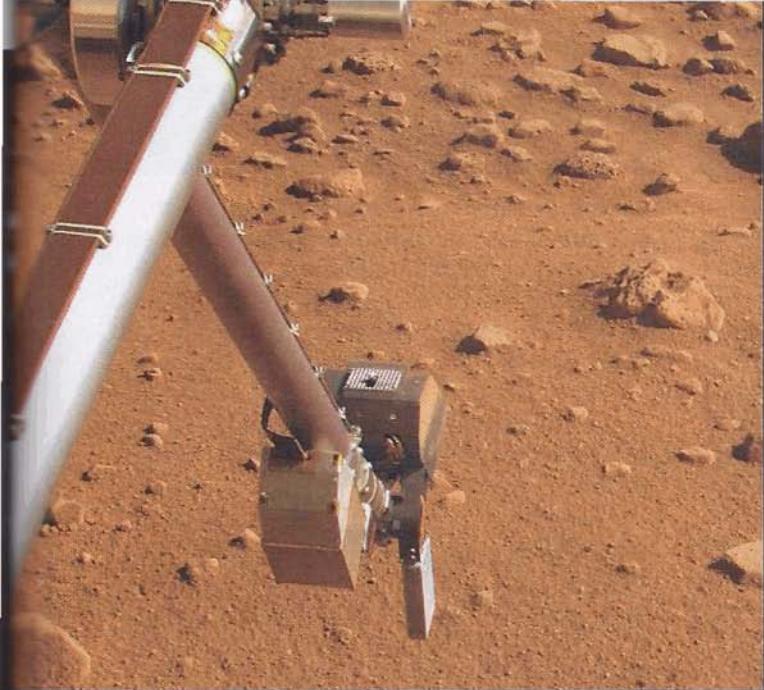
Two Mars Exploration Rovers, Spirit and Opportunity, arrived on Mars in January 2004, their landing sites chosen on the basis of data acquired from earlier missions. The rovers—each about the size of a go-cart—slowed their descent through the Martian atmosphere by using heat shields, parachutes, and rockets. When landing, they bounced on the surface, encased in a cocoon of air bags in much the same way as their smaller predecessor, Mars Pathfinder, had in 1997.#

The surface of Mars has about the same area as the dry land on earth, so it provides a broad scope for robotic exploration. The site chosen for the rover Opportunity was Meridiani Planum, a plateau of ancient layered rocks containing the iron-rich mineral hematite. Spirit landed on the other side of Mars to explore the depths of the giant Gusev cra-

* The 2001 Mars Odyssey and the Mars Reconnaissance Orbiter were launched by the National Aeronautics and Space Administration (NASA), and the Mars Express was launched by the European Space Agency.

See the article "A Robot Explores Mars," in the June 22, 1998, issue of *Awake!*

* Twelve miles represents the distance from the bottom of the Mariana Trench in the Pacific Ocean to the top of Mount Everest.



▲ The robotic arm—with scoop, probe, and camera—of the Phoenix Mars Lander

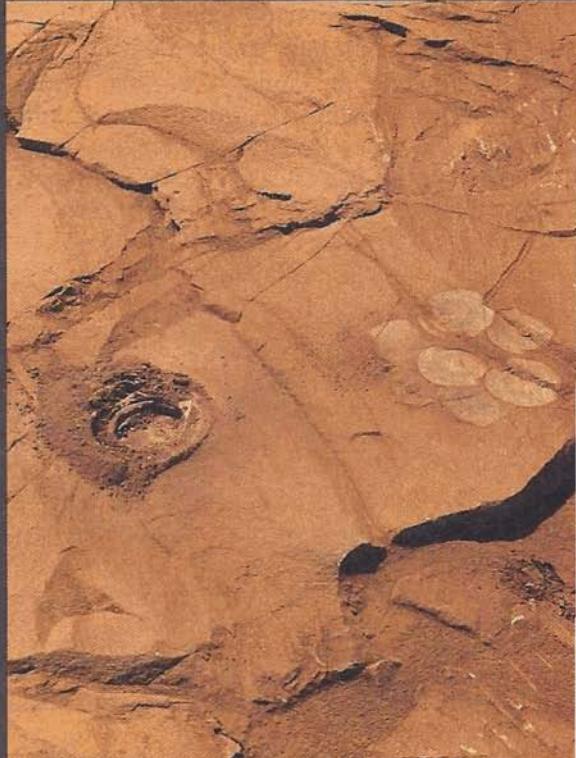
▼ The extinct volcano Olympus Mons, 13 miles high



▼ Color-enhanced photo of the "blueberries"



▼ The rover Spirit drilled and also scrubbed the surface of this rock



ter, which some researchers believe may have contained an ancient lake. The objective of the dual mission, says a NASA fact sheet, was "to assess the history of environmental conditions at sites that may once have been wet and favorable to life."

"Geologists" on Mars

When Spirit arrived at its destination on January 4, 2004, it was within a barren, rubbly landscape marked by shallow circular depressions. The rover studied the landscape much the same as a human geologist would,

IS THERE LIFE ON MARS?

Sir William Herschel and Percival Lowell, 18th- and 19th-century astronomers, suggested that the red planet teemed with intelligent life, and Darwin's theory of evolution seemed to bolster that notion. But all those views have been shattered. Satellite observations have revealed a barren landscape and a thin atmosphere made up mostly of carbon dioxide. In 1976, experiments carried out by the Viking 1 lander discovered no life on the Martian surface.*

Yet, scientists continue to look for signs of life, the Phoenix Mars Lander being their latest endeavor. Because some microbes are able to

* See the article "The Red Planet Revisited" in the November 22, 1999, issue of Awake!

by inspecting various soils, rocks, and landforms. Scientists guiding Spirit determined that its landing area was strewn with volcanic rocks and pocked with hollows caused by meteorites. Spirit then drove 1.6 miles to investigate a group of small hills. There, it discovered unusual rock forms and ledges of soft layered rocks that might have a volcanic origin.

Meanwhile, on January 25, 2004, Opportunity, after traveling 283 million miles, landed a mere 16 miles from the center of the target area. The air-bag-encased rover bounced on the flat Meridiani surface and rolled straight into a small crater. A scientist likened the landing to an "interplanetary hole in one" golf shot!

Opportunity explored a number of craters that contain layered rocks encapsulating small, hematite-rich spherules nicknamed blueberries. Although not truly blue, their gray color is a contrast to the background of reddish soil and rock. Certain rock layers form ripples and patterns typical of sand deposits in flowing water. Some scientists feel that these patterns, along with the chlorine and bromine

survive in extreme environments on earth, scientists feel that similar organisms may exist in certain places on Mars. The Beagle 2 craft, attached to Mars Express, was equipped to test for organic substances in Martian soil, but the landing failed in late 2003. The following year scientists detected traces of methane in the Martian atmosphere, fueling speculation as to whether the gas was of biologic or volcanic origin.

Can life arise spontaneously anywhere in the universe? The Bible answers, saying: "With [God] is the source of life." (Psalm 36:9) Yes, life can come only from life, the original Life-Giver being the Creator, Jehovah God.—Acts 17:25.

found in the rocks, suggest that salt water was present at one time.

The 2008 Phoenix Mars Lander mission has provided more data on the Martian surface, especially its icy region. An arm has scooped down below the surface to the ice, feeding soil and ice samples to Phoenix's two onboard "laboratories" for analysis. The mission, however, was designed to be relatively short-lived because just months after the completion of the lander's work, explained *Science* magazine, the Martian winter would "wrap Phoenix in a thick blanket of carbon dioxide frost."

That scientists can actually explore other planets hundreds of millions of miles away shows what can be done when people work together toward a single goal. Such achievements are also a credit to human ingenuity. Of course, space exploration—indeed, science as a whole—is only possible because of the consistent and totally reliable physical laws that govern the universe. These laws did not create themselves but were established by the Grand Architect of the universe, Jehovah God.

A Bicycle That Sharpens Knives

BY AWAKE! WRITER IN TANZANIA

■ What would you think if you saw a man seated backward on a bicycle, pedaling vigorously but standing still? In parts of the world, such as here in East Africa, you would likely be watching a knife sharpener—a man who makes his living by filling a community need.

His bicycle is ordinary but has a few important modifications. It has a circular grindstone mounted on a reinforced luggage carrier. For the drive belt, a nylon string is wrapped around the rim of an extra bicycle wheel that has been split in half and welded to the back wheel of the bike.

It is not certain how this ingenious implement came to Africa. "I have been told that such bikes were used in Dar es Salaam, the capital of Tanzania, before the idea came to the city of Moshi, where I live," says Andrea, a man who has sharpened knives this way since 1985. "It came into use here in 1982," he adds.

How does one obtain a knife-sharpening bike? Andrea explains, "We go to a *fundi*, Swahili for 'craftsman,' and ask him to modify a normal bike according to our specifications." The finished product is usually ready in a day or two.

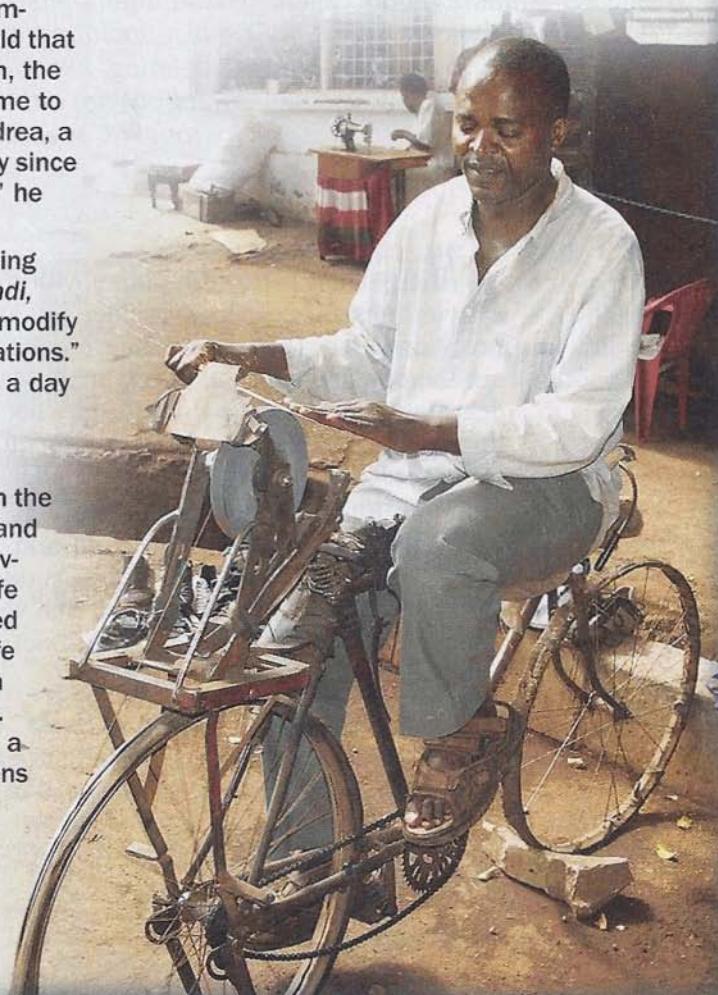
Sparks and Sweat!

Andrea's day begins at about seven in the morning, when he mounts his bicycle and heads for a well-populated area. On arriving, he calls out: "Knife sharpening! Knife sharpening!" He also rings the bells fitted to his bike. Soon the face of a housewife appears at a window. She hails Andrea and gives him a couple of blunt knives. A neighbor brings over a machete; and a barber, his scissors. Andrea also sharpens hoes, drills, and almost anything that has a cutting edge.

When setting up, Andrea looks for a level patch of ground and lowers his bike stand, which elevates the back wheel. He then attaches the nylon drive belt, seats himself on a second saddle, which faces to the rear, and pedals. Sparks fly and sweat appears as he hones an assortment of blades to a razor edge. At about six in the evening, Andrea calls it a day.

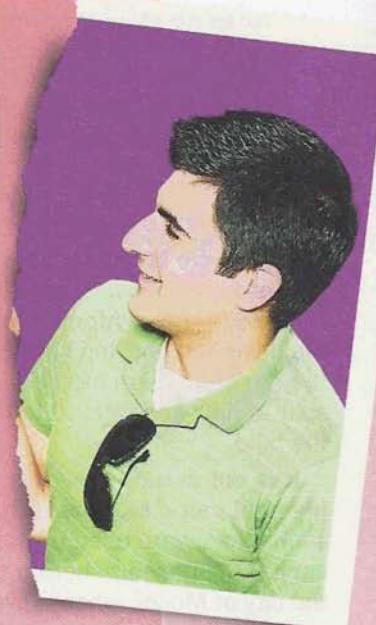
The biking knife sharpener is but one example of how "diligent ones" can use resourcefulness and initiative to make an honest living, even under difficult economic circumstances.

—Proverbs 13:4.



How can I get over a breakup?

*"We'd been dating for six months and had been friends for five years. When he wanted to end the relationship, he couldn't even face me. He just stopped talking to me. I felt helpless. The disappointment was overwhelming. I kept asking myself, 'What did I do wrong?'"—Rachel.**



A BREAKUP can crush your joyful disposition and replace it with tearful despair. Consider Jeff and Susan, who dated for two years. Over that period their emotional bond grew. Throughout the day, Jeff sent Susan text messages with expressions of endearment. From time to time, he gave her gifts to show that he was thinking of her. "Jeff put forth an effort to listen to me and understand me," Susan says. "He made me feel special."

Before long, Jeff and Susan were talking about marriage and where they would live as husband and wife. Jeff even inquired about Susan's ring size. Then, quite suddenly, he called off the relationship! Susan was devastated. She went through the motions of daily life, but she felt numb with shock. "I became mentally and physically exhausted," she says.[#]

Why It Hurts

If you've been in a situation similar to that of Susan, you might well wonder, *'Will I ever be able to move on?'* (Psalm 38:6) Your dis-

* Names in this article have been changed.

[#] Although the individuals quoted in this article are female, the principles discussed apply to males as well.

tress is understandable. Breaking up may be one of the most traumatic experiences you've ever had to endure. In fact, some have said that a breakup is like a minideath. You may even find yourself going through these and perhaps other typical stages of grief:

Denial. *'It can't be over. He'll change his mind in a day or two.'*

Anger. *'How could he do this to me? I can't stand him!'*

Depression. *'I'm unlovable. No one will ever love me.'*

Acceptance. *'I'm going to be all right. The breakup hurt, but I'm getting better.'*

The good news is, you *can* reach the acceptance stage. How much time it will take to get there depends on a number of factors, including how long your relationship lasted and how far it progressed. In the meantime, how can you cope with your heartbreak?

Moving Forward

You may have heard the saying, Time heals all wounds. When you first break up, those words might ring hollow. That's because time is only part of the solution. To illustrate: A cut on your skin will heal *in time*, but it hurts *now*. You need to stop the bleeding and soothe the pain. You also need to keep it from becoming infected. The same is true with an emotional wound. Right now, it hurts. But there are steps you can take to lessen the pain and keep from becoming infected with bitterness. Time will do its part, but how can you do yours? Try the following.

■ Allow yourself to grieve. There's nothing wrong with having a good cry. After all, the Bible says that there is "a time to weep" and even "a time to wail." (Ecclesiastes 3:1, 4) Shedding tears doesn't mean you're weak. In the midst of emotional anguish, even David—a courageous warrior—once admitted: "Every night my bed is damp from my weeping; my pillow is soaked with tears."—Psalm 6:6, *Today's English Version*.



A breakup is like a painful cut—it hurts, but in time it will heal

■ Take care of your physical health. Physical exercise and proper nutrition will help replenish the energy lost from the emotional toll of a breakup. "Bodily training is beneficial," the Bible says.—1 Timothy 4:8.

What areas pertaining to your health might you need to give attention to?

.....
.....
.....

■ Keep busy. Don't stop doing the things that interest you. And now, more than ever, don't isolate yourself. (Proverbs 18:1) Associating with those who care about you will give you something positive on which to focus.

What goals can you set with regard to keeping busy?

.....
.....
.....

■ Pray to God about your feelings. This might be a challenge. After a breakup, some even feel betrayed by God. They reason, 'I prayed and prayed that I would *find* someone, and *now* look at what happened!' (Psalm 10:1) Would it be right, though, to view God as merely a celestial matchmaker? Surely not; nor is he responsible when one party does not wish the relationship to continue. We do know this about Jehovah: "*He cares for you.*"

SUGGESTION

Susan, mentioned earlier, made a list of scriptures and kept it handy so that she could read those texts when she felt she was losing control. Perhaps you can do the same with some of the scriptures cited in this article.

■ What other reasons, do you think, might have been involved?

■ In hindsight, is there anything you could have done that would have changed the outcome? If so, what?

■ Has this experience revealed any ways in which you would like to grow spiritually or emotionally?

■ What, if anything, would you do differently in your next relationship?

(1 Peter 5:7) So pour out your feelings to him in prayer. The Bible states: "Let your petitions be made known to God; and the peace of God that excels all thought will guard your hearts and your mental powers by means of Christ Jesus."—Philippians 4:6, 7.

What specific things could you pray to Jehovah about while you are striving to cope with the anguish of a breakup?

Looking Ahead

After you've had time to heal, you might do well to take a close look at just what happened in your past relationship. When you're ready to do that, you may find that writing out your responses to the following questions will help.

■ Were you given a reason for the breakup? If so, write the reason below, regardless of whether you feel it was valid.

Granted, the relationship you were involved in didn't become what you had hoped. But remember this: In the middle of a storm, it's easy to focus on the dark sky and the pouring rain. Eventually, though, the rain stops and the sky clears. The youths quoted earlier in this article found that they were, in time, able to move on. Be assured that the same can be true of you!

More articles from the "Young People Ask" series can be found at the Web site
www.watchtower.org/ype

TO THINK ABOUT

- What have you learned about yourself from your past relationship?
- What have you learned about the opposite sex?
- In whom could you confide if feelings of distress about the breakup seem overwhelming?

Dyslexia Has Not Held Me Back

AS TOLD BY MICHAEL HENBORG

I have a learning disability—dyslexia. This condition, which affects my father, my mother, and my three younger brothers, has made it difficult for me to read my native Danish, and school proved to be a real struggle. Nevertheless, I have received much help and encouragement, especially from my family.

MY FAMILY have been Jehovah's Witnesses for four generations, and reading, especially of the Bible and Bible study aids, has always been an important part of our life. My younger brother Flemming and I also regularly accompanied Father in the Christian ministry, which impressed upon us the importance of reading and writing well.

As a child, I read every issue of *The Watchtower* and *Awake!* taking up to 15 hours to read one magazine! Additionally, I set out to read the entire Bible. I also joined the Theocratic Ministry School, which is held in congregations of Jehovah's Witnesses around the world. This school trains students to read and speak well and to give talks before an audience. All these provisions have helped me immeasurably in my struggle with dyslexia. Little did I know, however, that I would face many more challenges. Let me explain.

Learning English

In 1988, when I was 24 years old, I began serving as a pioneer, a full-time minister of the good news. Since Denmark hosts many immigrants, I wanted to share Bible truths with them. To do so effectively, however, I had to learn English—a project I found very difficult. Still, through perseverance and private lessons, I slowly improved, and in time I was able to share the good news of God's

Kingdom with English-speaking foreigners in my hometown of Copenhagen. To be sure, I made many linguistic errors, but I did not let that stop me.

A grasp of English also enabled me to serve as a volunteer worker on construction projects of Jehovah's Witnesses in various lands. First I was sent to Greece, and later I assisted in the construction of the branch in Madrid, Spain.

Because I wanted to expand my share in the preaching work, I applied for enrollment in the Ministerial Training School, sponsored by Jehovah's Witnesses. This school provides eight weeks of specialized training to single Christian men who are willing to accept assignments in places that have a greater need for ministers of the good news. (Mark 13:10) I was invited to attend an English-language class to be held in Sweden.

The class began on September 1, 1994. I wanted to be well prepared, so I studied English four hours a day for about eight months, and I joined an English-speaking congregation. Then, when the school began, I refused to allow my disability to impede my progress. For example, when the instructors posed questions, I often raised my hand to answer, even though I was not always sure of the correct words to use. After graduating, I was

„Han vil torre hver tare af de-
kal ikke være mere, heller ikke
et døde.“ —Dødsbrevet til den

eyes, and death will be no more, neither will mo-
ing nor outcry nor pain be anymore. The former

What is dyslexia? The word “dyslexia” comes from Greek and means “poor speech.” A life-long condition, dyslexia is a language-related disability that especially involves reading. People who have dyslexia tend to have difficulty making the connection between letters and the sounds those letters represent. Specific symptoms, however, may differ from person to person.

What causes dyslexia? The exact causes remain unclear, although heredity is a factor. While studies indicate abnormal brain development and function, dyslexia is not linked to general intelligence or lack of the desire to learn. In fact, sufferers are often gifted in areas not requiring strong language skills.

How is dyslexia treated? Early identification of the condition is important. Effective training in language skills involves using several senses, especially hearing, seeing, and touching. So that they can progress at their own pace, many students need one-on-one assistance. They may also need help with emotional issues resulting from difficulties in school. With good tutoring and hard work, students with dyslexia can learn to read and write well.*

* The above is based on information supplied by the International Dyslexia Association. See also the article “Helping Children With Learning Disabilities,” in the January 2009 issue of this magazine.

assigned to serve as a pioneer in Copenhagen. Learning English was a major challenge, but an even greater one awaited me.

Tackling Tamil

In December 1995, I was assigned to a Tamil-speaking congregation in the Danish town of Herning. Tamil, I thought, must be one of the most difficult languages in the world. It has 31 letters, as well as combinations of consonants and vowels to form composite letters, making a total of nearly 250 characters!

At first, my talks to the congregation were in Danish and translated into Tamil. When finally I launched into Tamil, I doubt

that anyone understood me. Still, the audience listened respectfully, even though many seemed somewhat amused. So that I could learn faster, I decided to go to a country where Tamil is spoken by millions—Sri Lanka.

When I arrived in Sri Lanka in October 1996, the country was in the throes of a civil war. For a time, I lived in the town of Vavuniya on the border between the two fighting parties. The local Witnesses had little materially, but their love and hospitality were overwhelming, and they tried hard to teach me Tamil. Non-Witnesses were impressed that I, the only Westerner in the area, tried to converse in their language. Their appreciative, humble attitude made it easier for me to talk to them about the Bible.

In January 1997, I had to return to Denmark, and the following year, I married Camilla, a pioneer. Sri Lanka beckoned me back, so in December 1999, I returned, this time, of course, with my wife. Before long, we were conducting Bible studies with a number of families and individuals, and we accompanied local Witnesses on their Bible studies. We were fully immersed in both the ministry and the language.

In March 2000, we had to return to Denmark. Parting from our fellow Witnesses and Bible students was very difficult, for we had truly grown to love them. But more work lay ahead of us, including the challenge of learning yet another language!

From Tamil to Latvian

In May 2002, Camilla and I, now married for four years, received an invitation to serve as missionaries in Latvia, a European country that lies to the east of Denmark. Camilla learned Latvian quickly and could communi-



With a fellow Witness in Sri Lanka

Over the years, my wife and I have been able to help a number of people come to an accurate knowledge of Bible truth. However, we cannot take the credit. Rather, we thank Jehovah for the good results that we have seen. After all, we just plant and water the seeds of Bible truth; God makes them grow.
—1 Corinthians 3:6.

When a Hindrance Can Be a Help

Although dyslexia has been a hindrance to me, it has also been an advantage. How so? When I give talks in the congregation, I tend to rely less on written notes and therefore have better eye contact with my audience. Also, I make full use of illustrations, which are relatively easy to remember. Thus, in certain respects my condition has helped me to develop my teaching skills.

The Christian apostle Paul wrote: "God chose the weak things of the world, that he might put the strong things to shame." (1 Corinthians 1:27) My disability has certainly made me a 'weak thing' in some respects. Yet, as I and many others have learned, Jehovah can more than make up for our lack. We just need to set reasonable goals, have modest expectations, pray for God's holy spirit, and go out there and try.



With Camilla in Latvia

* After serving in Latvia for six years, the Henborgs were recently reassigned to Ghana.

WAS IT DESIGNED?

The Wing of Nature's Fliers



A broad-billed
hummingbird

Laurie Excel/Fotostock/
age fotostock

■ Which would you think are more efficient in the air? Planes or such creatures as bats, insects, and birds? Believe it or not, the plane is no match for these small wonders of nature, who "have outstanding capabilities to remain airborne through wind gusts, rain, and snow," says Wei Shyy, professor of aerospace engineering at the University of Michigan.* Their secret? Wings that flap—the envy of aviators since man's attempts at flying first got off the ground.

Consider: While some birds and insects are in flight, their wings are constantly changing shape to adapt to the environment. This enables them to hover and to perform sharp maneuvers. The magazine *Science News* reports what has been observed in bats: "When flying at slow speeds, about 1.5 meters per second, the bats turned their wing-tips upside down and quickly flicked them backward during an upstroke. Scientists [have] surmised that this trick . . . provides lift and thrust."

To be sure, there is still much to learn about natural fliers. "Physically, what are they doing to the air to produce such efficient lift?" asks Peter Ifju, professor of mechanical and aerospace engineering at the University of Florida. He adds: "There are all kinds of flow physics we just don't understand. We can see what [birds and insects are] doing, but we don't understand how that interacts with the air."

What do you think? Did the versatile wing of natural fliers come about by chance? Or was it designed?

* Although many winged creatures can fly in the rain, most seek a place of safety.



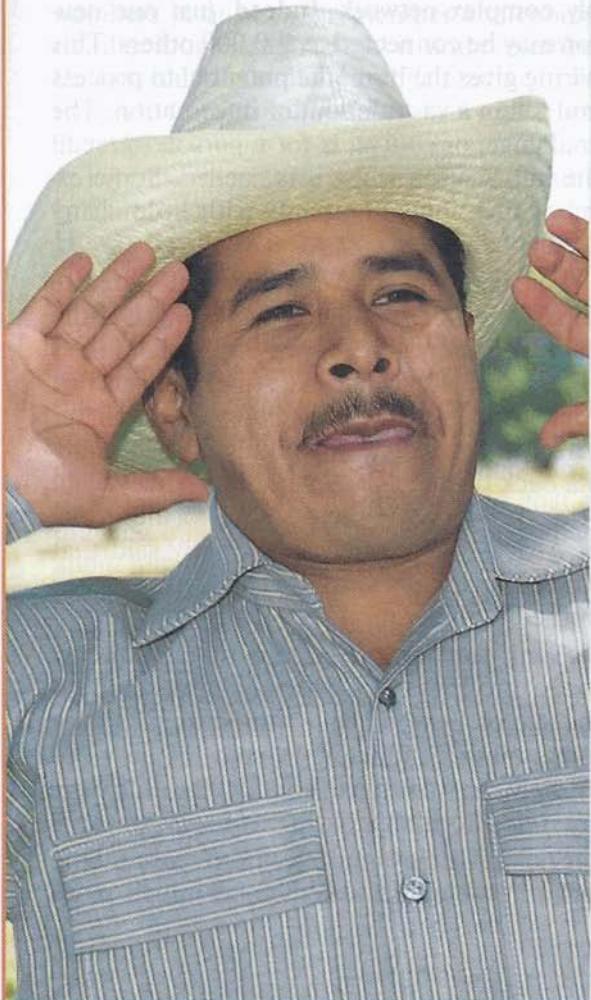
A mouse-eared bat

© Delpho, M/age fotostock

Whistled Speech

AN INGENIOUS WAY TO "TALK"

BY AWAKE! WRITER IN MEXICO



■ In the sierra of Oaxaca, Mexico, the local Mazatec people have no telephones, cellular or otherwise. Yet, they manage to communicate over a distance of a mile or more—for example, while working on hillside coffee plantations. Their secret? Long ago, the Mazatecs developed a whistled form of their language. Says Pedro, a young Mazatec: “Mazateco is a tonal language. So when we whistle, we copy the tone and rhythm of the spoken tongue. And we whistle purely with the lips, not with the aid of our fingers.”*

Pedro’s friend Fidencio explains the advantage of articulated whistling: “We use this form of communication over long distances and generally for short conversations. For example, a father may have sent his son to the store to buy tortillas but forgot to ask him to get tomatoes. If the boy is too far to hear the spoken word, his father can whistle the instructions.”

Jehovah’s Witnesses too sometimes whistle when communicating with one another. Pedro explains: “When I visit isolated territories and want to invite a spiritual brother to accompany me, I don’t have to go all the way to his house. I just whistle.”

“So that we know who is ‘talking,’ ” says Pedro, “we each have a personalized whistle. Usually, only Mazatec men use whistled speech. A woman may understand the language and even use it in the family, but she would not use it to communicate with just any man. That would be considered improper.”

Whistled speech is by no means unique to Mazatecs; other whistlers have been found in the Canary Islands, China, and Papua New Guinea. Typically, they are people who live in mountains and dense forests. In fact, more than 70 whistled languages may exist, and at least 12 have been studied.

We cannot help but marvel at human creativity. Indeed, when you combine that talent with a burning desire to communicate, the only limits are those set by our imagination—and that seems to be almost without limit!

* A reference work explains: “By variations in speed, timbre, and intensity of the whistle, the Mazatecs are able to exchange a great number of concepts.”

You Can Improve Your Memory!

"Memory enlarges our world. Without it, we would lack a sense of continuity and each morning encounter a stranger staring back from the mirror. Each day and event would exist in isolation; we could neither learn from the past nor anticipate the future."

—“MYSTERIES OF THE MIND.”



WHY is it that some birds can remember months later the places where they stored seeds for the winter and squirrels can remember the locations where they buried nuts, but we may forget where we left our keys an hour ago? Yes, many of us complain of a faulty memory. Yet, the human brain, though imperfect, has an amazing capacity to learn and remember. The secret is to make the most of what we have.

Enormous Potential

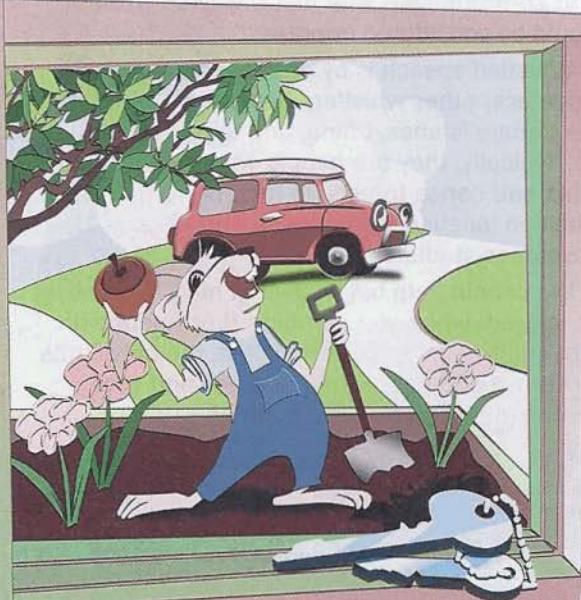
The human brain weighs about three pounds and is roughly the size of a grape-

fruit, yet it contains some 100 billion neurons, or nerve cells, all of which form an incredibly complex network. Indeed, just one neuron may be connected to 100,000 others. This wiring gives the brain the potential to process and retain a vast amount of information. The challenge, of course, is for a person to recall the information when it is needed. Some excel at this, including many with little if any secular schooling.

For example, in West Africa, nonliterate tribal chroniclers called griots can recite the names of many generations of people in their villages. Griots enabled American author Alex Haley, whose book *Roots* won a Pulitzer prize, to investigate his family tree in Gambia back through six generations. Haley said: “I acknowledge immense debt to the griots of Africa—where today it is rightly said that when a griot dies, it is as if a library has burned to the ground.”

Consider, too, the famous Italian conductor Arturo Toscanini, who was “discovered” at the age of 19 when called upon to substitute for another conductor. In spite of his poor eyesight, he was able to conduct the entire opera *Aida*—from memory!

Such feats may amaze us. Yet, most people have the potential to remember much more



than they think they can. Would you like to enhance your memory?

Improving Your Memory

Memory involves three stages: encoding, storage, and retrieval. Your brain encodes information when it perceives it and registers it. This information can then be stored for future retrieval. Memory failure occurs when any one of these three stages breaks down.

Memory itself has been divided into various kinds, including sensory memory, short-term memory, and long-term memory. Sensory memory receives information from stimuli through the senses, such as smell, sight, and touch. Short-term memory, also called working memory, holds small amounts of information for brief periods. Thus, we can add up numbers in our head, remember a telephone number long enough to dial it, and remember the first half of a sentence while reading or listening to the second half. But as we all know, short-term memory has its limits.

If you want to store information indefinitely, it must go into your long-term memory. How can you put it there? The following principles will help.

■ **Interest** Cultivate an interest in the subject, and remind yourself of the reasons for learning it. As your own experience in life may tell you, when your emotions are involved, you enhance your memory. This fact can be a great help to Bible students. When they read the Bible with the twofold goal of drawing closer to God and teaching others about him, their memory can be considerably enhanced.—Proverbs 7:3; 2 Timothy 3:16.

■ **Attention** “Most ‘memory failures’ actually represent failures in attention,” says the book *Mysteries of the Mind*. What can help you to pay attention? Be interested and, where possible, take notes. Note-taking not only focuses the mind but also enables a listener to review the material later.

■ **Understanding** “With all that you acquire, acquire understanding,” says Prov-

ADDITIONAL TIPS

- Stimulate your memory by learning new skills, a new language, or a musical instrument.
- Focus your attention on the most important things.
- Learn mnemonic techniques.
- Drink sufficient water. Dehydration can cause mental confusion.
- Get enough sleep. During sleep the brain stores memories.
- Relax while you are studying. Stress triggers the release of cortisol, which can disrupt nerve interactions.
- Avoid alcohol abuse and smoking. Alcohol interferes with short-term memory, and alcoholism can lead to a deficiency of thiamine, a B-vitamin that is essential to the proper working of the memory. Smoking reduces oxygen to the brain.*

* Based on information published in the electronic magazine *Brain & Mind*.

erbs 4:7. When you do not understand a teaching or concept, likely you will not remember it well, if at all. Understanding illuminates the relationship between the parts, knitting them together to form a logical whole. For example, when a student of mechanics understands how an engine works, he will better remember details about the engine.

■ **Organization** Categorize similar concepts or related ideas. For instance, a grocery list is easier to remember when we categorize items—meats, vegetables, fruits, and so on. Also, divide the information into manageable chunks of not more than five to seven items. Telephone numbers are usually divided

1. The bull to be offered in sacrifice. 2. The trench full of water. 3. The many hundreds of people that were present, including 450 prophets of Baal. 4. Zechariah the son of Jehoiada. 5. No.

into two parts so that they can be remembered more easily. Finally, it may help to put your list into a certain order, perhaps alphabetical.

■ **Recitation, or verbalization** Repeating aloud what you want to remember (a foreign-language word or phrase, for example) will strengthen the neural connections. How so? First, saying the word forces you to pay close attention. Second, you may get immediate feedback from your teacher. And third, listening—even to yourself—calls into play other parts of your brain.

■ **Visualization** Make a mental picture of what you wish to remember. You might also find it helpful to draw it or map it out. Like verbalization, visualization makes use of different parts of your brain. The more senses you use, the deeper the information is embedded.

■ **Association** When learning something new, associate it with something you already know. Linking thoughts to memories already stored makes encoding and retrieving easier, the association serving as a cue. For example, to remember a person's name, link it to some unusual feature of his appearance or to something else that will call the name to mind. The more humorous or absurd the association, the better the recall. In short, we

need to think about the people and things we want to remember.

The book *Searching for Memory* states: "If we operate on automatic pilot much of the time and do not reflect on our environment and our experiences, we may pay a price by retaining only sketchy memories of where we have been and what we have done."

■ **Consolidation** Allow time for the information to be processed, to soak in, as it were. One of the best ways to do this is to review what you have learned, perhaps by repeating it to someone else. If you had an interesting experience or read something upbuilding in the Bible or in a Bible study aid, share it with someone. In that way both of you will benefit—your memory will be reinforced and your friend, encouraged. For good reason, repetition has been called the mother of retention.

Mnemonics—A Useful Tool

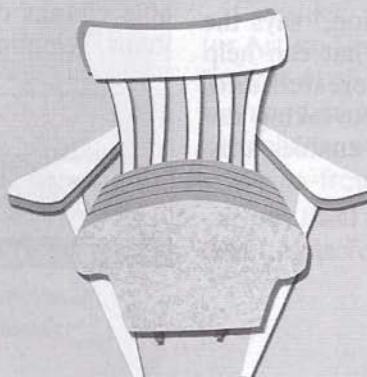
In ancient Greece and Rome, orators were able to deliver long speeches without referring to a single note. How did they do it? They used mnemonics. A mnemonic is a strategy or device that helps us store information in the long-term memory and recall it when needed.

A mnemonic device used by ancient Greek orators was the method of loci, or the loca-

TAKE AN IMAGINARY WALK

How would you remember a grocery list with several items, such as bread, eggs, milk, and butter. Using the loci method, you could "see" them as you go for an imaginary walk through your living room.

Visualize a cushion of bread in the armchair



eggs incubating under the lamp



BE GLAD THAT YOU CAN FORGET!

Imagine what your life would be like if you remembered everything, whether important or trivial. Your mind would become filled with clutter, would it not? In fact, one woman who could recall practically everything that occurred in her life, "described her constant recall as 'non-stop, uncontrollable and totally exhausting' and as a 'burden,'" says *New Scientist* magazine. Thankfully, most of us do not have that problem because our mind, researchers believe, has the ability to weed out irrelevant or out-of-date information. "Efficient forgetting," says *New Scientist*, "is a crucial part of having a fully functioning memory. When we forget something useful, . . . it just shows that this pruning system is working a little too well."

tion method, first described by Greek poet Simonides of Ceos in 477 B.C.E. This technique combines the principles of organization, visualization, and association with something familiar, such as a landmark on a road or an object in one's room or house. People who use the loci technique go for a mental walk, associating each piece of information that they want to remember with certain landmarks or objects. When they want to recall the information, they simply take that same mental walk again.—See the box "Take an Imaginary Walk."

Research done on people who ranked high in the annual World Memory Championships found that their superior memories were not due to exceptional intellect. Moreover, most participants were between 40 and 50 years of age. What was their secret? Many attributed their skill to their effective use of mnemonics.

Do you need to remember lists of words? An effective mnemonic for this is the *acronym*—combining the initial letter or letters of a group of words to form a new word. Many North Americans remember the names of the five Great Lakes—Huron, Ontario, Michigan, Erie, and Superior—by the acronym "HOMES." A similar memory aid is the *acrostic*, which was used extensively by the ancient

Hebrews. In many of the psalms, for example, the first word of each verse or group of verses begins with a successive letter of the Hebrew alphabet. (See Psalms 25, 34, 37, 111, 112, and 119.) This useful memory aid enabled singers to recall all 176 verses of Psalm 119!

Yes, you can train and improve your memory. As studies have shown, our memory is much like a muscle. The more we use it, the stronger it gets, even into old age.

your goldfish swimming
in a tank of milk



butter smeared all over
the television screen



The more humorous
or unusual, the better!
When you get to the store,
retrace your mental walk.



Colleges and "Hookup" Sex

"Except for some evangelical colleges . . . , there is little difference between public, private and Catholic colleges and universities in the 'hookup culture' that prevails on campus—one in which students seek sexual experiences with a variety of partners." So said Catholic theologian and assistant university professor Donna Freitas after doing research on sexual behavior and religion in American colleges. According to the *National Catholic Reporter*, Freitas said that religion's lack of influence on sexual mores reveals not only "the power of the college hookup culture" but also "the weakness of religious traditions in the face of it."

Parents Paid to Raise Girls

The Indian government is offering poor parents the equivalent of nearly \$3,000 (U.S.) to raise daughters, says a BBC News report. Families will receive a cash award upon the birth of a daughter and at various stages of her life up to the age of 18. Although gender selection and selective abortion were outlawed in 1994, they remain widespread. In fact, it is estimated that over the past 20 years, abortion claimed the lives of approximately 10 million female fetuses, seriously affecting the gender balance in some areas. According

■ "A team of astronomers using the Subaru and Keck telescopes on Mauna Kea [Hawaii] has discovered giant, three-dimensional filaments of galaxies extending across 200 million light-years of space." These filaments make up the largest-known structure ever discovered.—SUBARU TELESCOPE WEB SITE, JAPAN.

■ The United Kingdom's Office for National Statistics reports that "the number of weddings [in England and Wales] in 2006 was the lowest for 110 years. More and more couples prefer to cohabit." —THE GUARDIAN WEEKLY, BRITAIN.

■ According to the Pew Forum on Religion and Public Life, "44% of adults have either switched religious affiliation, moved from being unaffiliated with any religion to being affiliated with a particular faith, or dropped any connection to a specific religious tradition altogether." —U.S.A.

to a 2001 census, nationwide there were 927 girls for every 1,000 boys under the age of six and the gap was widening. In one state the birth ratio was 793 girls born for every 1,000 boys.

Birds' Reaction to Noise

Some birds go to great lengths to make themselves heard over city clamor. While urban noise may be a nuisance for humans, it can be a question of "life and death" for birds, says *New Scientist* magazine, since males sing to "attract mates and demarcate their territory." Because city noise is louder at low frequencies, certain birds make their songs more audible by singing at night or by raising their volume or pitch. What is more, this adaptability is not limited to urban birds, says the magazine. Those living near "waterfalls and river torrents also sing at higher frequencies."





What Is Missing From This Picture?

Read 1 Kings 18:19-24, 30-40. Now look at the picture. What features are missing? Write your answers on the lines below.

1.

2.

3.

FOR DISCUSSION: Why did Jehovah accept Elijah's sacrifice? What kind of sacrifices does Jehovah accept from his servants today?

From This Issue

Answer these questions, and provide the missing Bible verse(s).

PAGE 7 Jehovah is hanging the earth upon what?

Job 26:_____

PAGE 9 Whose works are all done in wisdom?

Psalm 104:_____

PAGE 13 We choose life by doing what?

Deuteronomy 30:_____

PAGE 20 When we pour out our feelings to Jehovah, what does he give us? Philippians 4:_____



Children's Picture Search

Can you find these pictures in this issue? In your own words, describe what is happening in each picture.

What Do You Know About the Prophets?

4.

What prophet reproved King Jehoash of Judah for his badness?

CLUE: Read 2 Chronicles 24:20-22.

5.

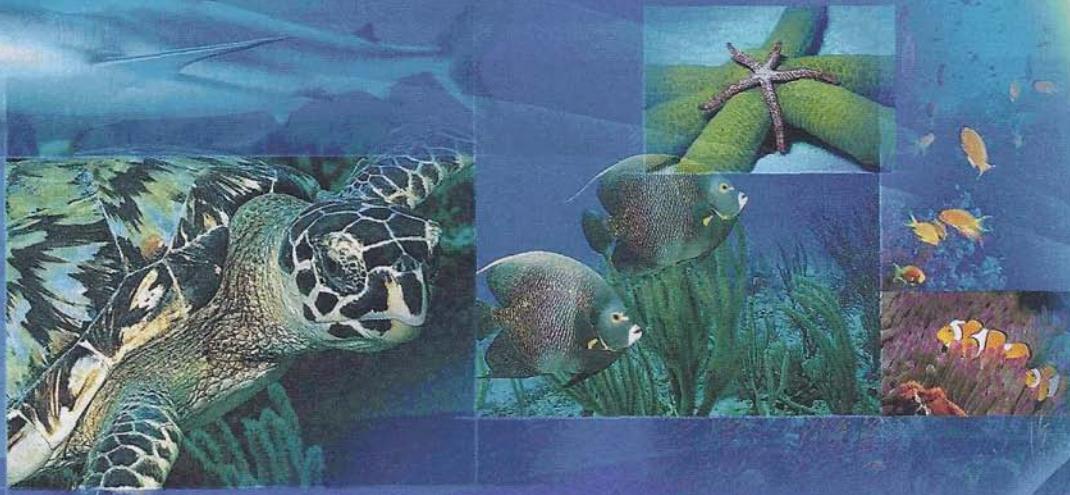
King Jehoash had that prophet put to death for his words. Does this mean that Jehovah disapproved of what the prophet said?

CLUE: Read Luke 11:50, 51.

FOR DISCUSSION: Why should you not worry if people persecute you for obeying Jehovah? CLUE: Read Matthew 5:11, 12 and 1 Peter 4:14.

■ (Answers on page 27)





Is there a Creator? If so, does he care about you?

- We are far from alone when asking, What caused the universe, our planet, and our life on it? And how does this relate to our finding a satisfying meaning in life?

Many people believe in creation, that there is a Creator who cares about us. Does research suggest this to be reasonable in our scientific age? Why are many educated people looking into the Bible, and should what it says about a Creator matter to us and our loved ones?



Is There a
Creator
Who Cares About You?

Eagle Nebula: J. Hester and
P. Scowen (AZ State Univ.), NASA