

Awake!

JULY 22, 2005



NATURAL DISASTERS Are They Getting Worse?

NATURAL DISASTERS Are They Getting Worse? 3-11

Natural disasters—including severe earthquakes and tsunamis—are in the news. What are the causes? What does the future hold?

COVER: BANGLADESH 2004
Monsoons leave millions homeless

COVER: © G.M.B. Akash/Panos Pictures

INDIA 2004 A girl left homeless and in shock by the deadliest recorded tsunami. It affected 12 countries and claimed over 200,000 lives

The Man Who “Moved the Earth” 14

Nicolaus Copernicus was called a fool, but his accomplishments have affected modern thinking.

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Have you ever found yourself drawn to someone whom you knew to be a bad influence on you? What is behind such an attraction?

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NATURAL DISASTERS ON THE RISE?

"It is to be feared that extreme events which can be traced to climate change will have increasingly grave consequences in the future. This means that we must reckon with new types of weather risks and greater loss potentials. . . . In accordance with the precautionary principle, we would be well-advised to prepare ourselves for dramatic changes."

—“TOPICS GEO—ANNUAL REVIEW: NATURAL CATASTROPHES 2003.”

FRANCE 2003 Summer heat wave in Europe causes 30,000 deaths; Spain hits 112°F.

PARTS of Europe sweltered during the summer of 2003. The high temperatures contributed to approximately 30,000 deaths in Belgium, Britain, France, Italy, the Netherlands, Portugal, and Spain. A premonsoon heat wave in Bangladesh, India, and Pakistan resulted in 1,500 deaths, while drought and record heat in Australia triggered bushfires that consumed over seven million acres.

According to the World Meteorological Organization, “the 2003 Atlantic hurricane season saw the development of 16 named storms,

which is well above the 1944-1996 average of 9.8, but consistent with a marked increase in the annual number of tropical systems since the mid-1990s.” The pattern continued in 2004, which saw devastating hurricanes sweep into the Caribbean and the Gulf of Mexico, where they claimed some 2,000 lives and left a trail of destruction.

In 2003, Sri Lanka was hit by a cyclone that caused severe flooding, resulting in at least 250 deaths. In 2004, a record of at least 23 typhoons brewed in the western Pacific. Ten of them hit Japan, where they caused extensive

▲ Alireza/EPA/Sipa Press

damage and took more than 170 lives. Floods resulting from heavy monsoon rains affected nearly 30 million people in South Asia, especially Bangladesh. Millions were made homeless, almost three million were displaced, and more than 1,300 were killed.

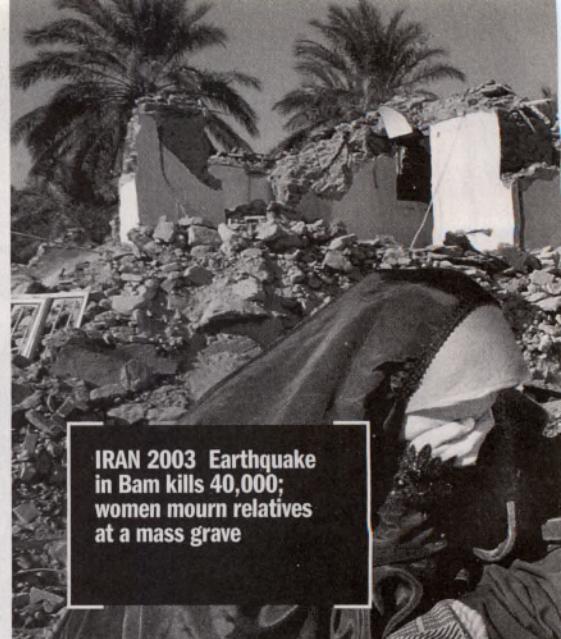
Several powerful earthquakes struck during 2003. On May 21, in Algiers, Algeria, a quake injured 10,000 people and left 200,000 homeless. At 5:26 a.m. on December 26, the earth quaked five miles south of the city of Bam in Iran. The magnitude 6.5 quake devastated 70 percent of the city, claimed 40,000 lives, and left more than 100,000 homeless. It was the most lethal natural disaster of the year. It also turned much of Bam's 2,000-year-old citadel, Arg-e-Bam, into rubble, robbing the region of an economically important tourist attraction.

Exactly one year later, a magnitude 9.0 quake occurred just off the western coast of northern Sumatra, Indonesia, spawning by far the deadliest tsunamis in recorded history. The killer waves claimed over 200,000 lives and left many more injured, homeless, or both. Even the east coast of Africa, 2,800 miles or more west of the epicenter, came within the tsunami's fatal embrace.

Are Darker Clouds on the Horizon?

Are such events a foretaste of what is to come? In regard to weather-related disasters, many scientists believe that human-induced changes in the atmosphere are altering the world's climate and contributing to more extreme weather. If true, this assessment does not bode well for the future. Adding to the risk, more and more people now live in disaster-prone areas, by choice—or because they have no alternative.

Statistics indicate that 95 percent of all disaster-



IRAN 2003 Earthquake
in Bam kills 40,000;
women mourn relatives
at a mass grave

related deaths occur in developing lands. Wealthy nations, on the other hand, have a lower mortality rate but experience 75 percent of the economic losses. Some insurers even wonder whether their industry can remain solvent under this onslaught of mounting losses.

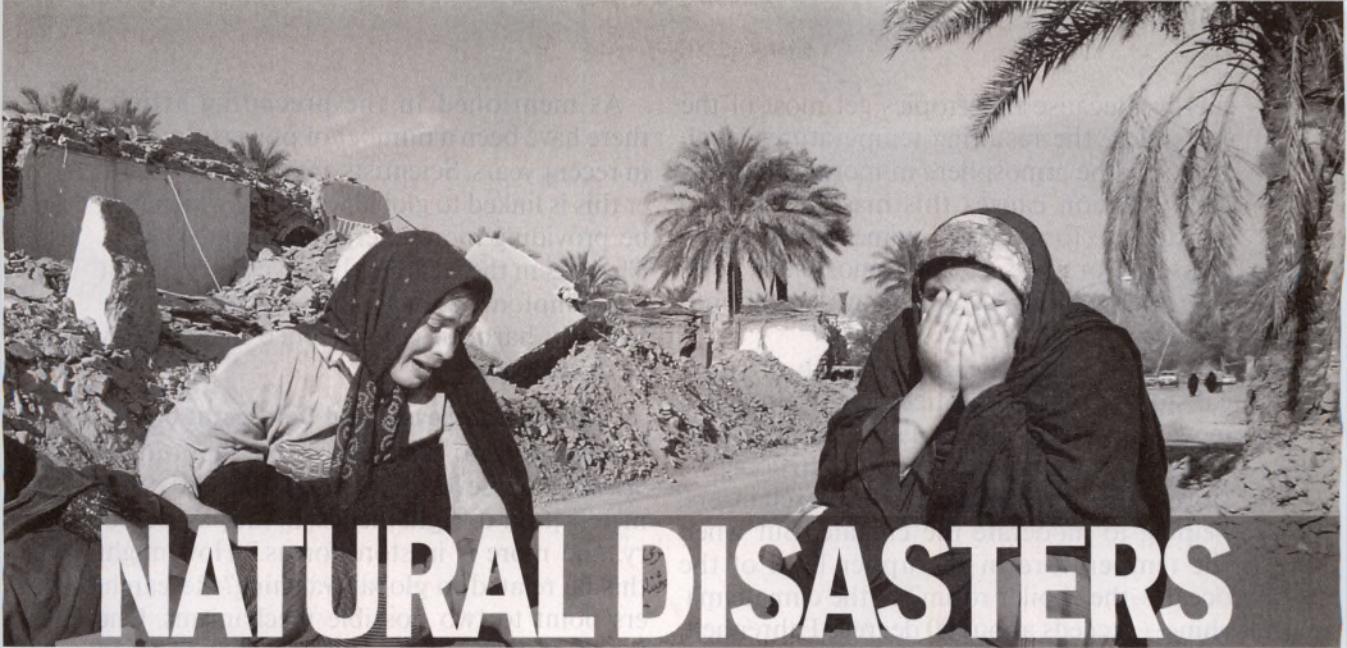
In the following article, we will examine some of the natural processes that lead to disasters and ways that humans may be adding to their severity. We will also consider whether mankind has the power and the will to effect the changes needed to make the earth a safer home for future generations.

Background and women: © Tim Dirven/Panos Pictures

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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NATURAL DISASTERS and the Human Factor

WHEN a car is well maintained, it can provide safe transportation. But that vehicle when abused and neglected can be dangerous. In some respects, the same may be said of planet Earth.

In the opinion of a number of scientists, human-induced changes in earth's atmosphere and oceans have made our planet a dangerous place by contributing to more frequent and more severe natural disasters. And the future looks uncertain. "We're in the mid-

dle of a large uncontrolled experiment on the only planet we have," said an editorial on climate change in *Science* magazine.

So that we can better grasp how human activity might be affecting the frequency and severity of natural disasters, we need to understand a little about the underlying natural phenomena. For example, what causes severe storms, such as hurricanes, to form?

Planetary Heat Exchangers

Earth's climate system has been likened to a machine that converts and distributes solar

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energy. Because the Tropics get most of the sun's heat, the resulting temperature imbalance sets the atmosphere in motion.* Earth's daily rotation causes this mass of moving, moist air to form eddies, some becoming depressions, or areas of low atmospheric pressure. Depressions, in turn, may develop into storms.

If you observe the general path of tropical storms, you will notice that they tend to move away from the equator—either north or south—toward cooler regions. In doing so, storms also serve as massive heat exchangers, helping to moderate the climate. But when the temperature in the upper level of the ocean—the “boiler room” of the climate machine—exceeds about 80 degrees Fahrenheit, tropical storms may acquire enough energy to become cyclones, hurricanes, or typhoons—regional names for essentially the same phenomena.

In terms of lives lost, the worst natural disaster in U.S. history resulted from a hurricane that slammed into the island city of Galveston, Texas, on September 8, 1900. Storm waves claimed between 6,000 and 8,000 lives in the city, plus up to 4,000 in nearby areas, and demolished some 3,600 houses. In fact, not one man-made structure in Galveston remained unscathed.

U. S. Geological Survey/Photo by R. E. Wilcox

* The uneven distribution of solar heat also causes ocean currents to form and transfer energy toward cooler regions.

As mentioned in the preceding article, there have been a number of powerful storms in recent years. Scientists are studying whether this is linked to global warming, which may be providing more energy to storm systems. Changes in the weather, however, may be just one symptom of global warming. Another potentially harmful consequence may already be in evidence.

Rising Sea Levels and Deforestation

According to an editorial in the journal *Science*, “sea levels have risen 10 to 20 centimeters [four to eight inches] in the past century, and more is in store for us.” How might this be related to global warming? Researchers point to two possible mechanisms. One is the prospect of the melting of land-based polar ice and glaciers, which would add to the volume of the oceans. The other factor is thermal expansion—as oceans become warmer, their volume increases.

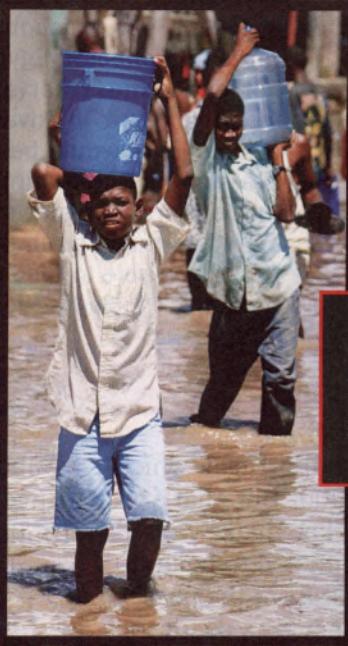
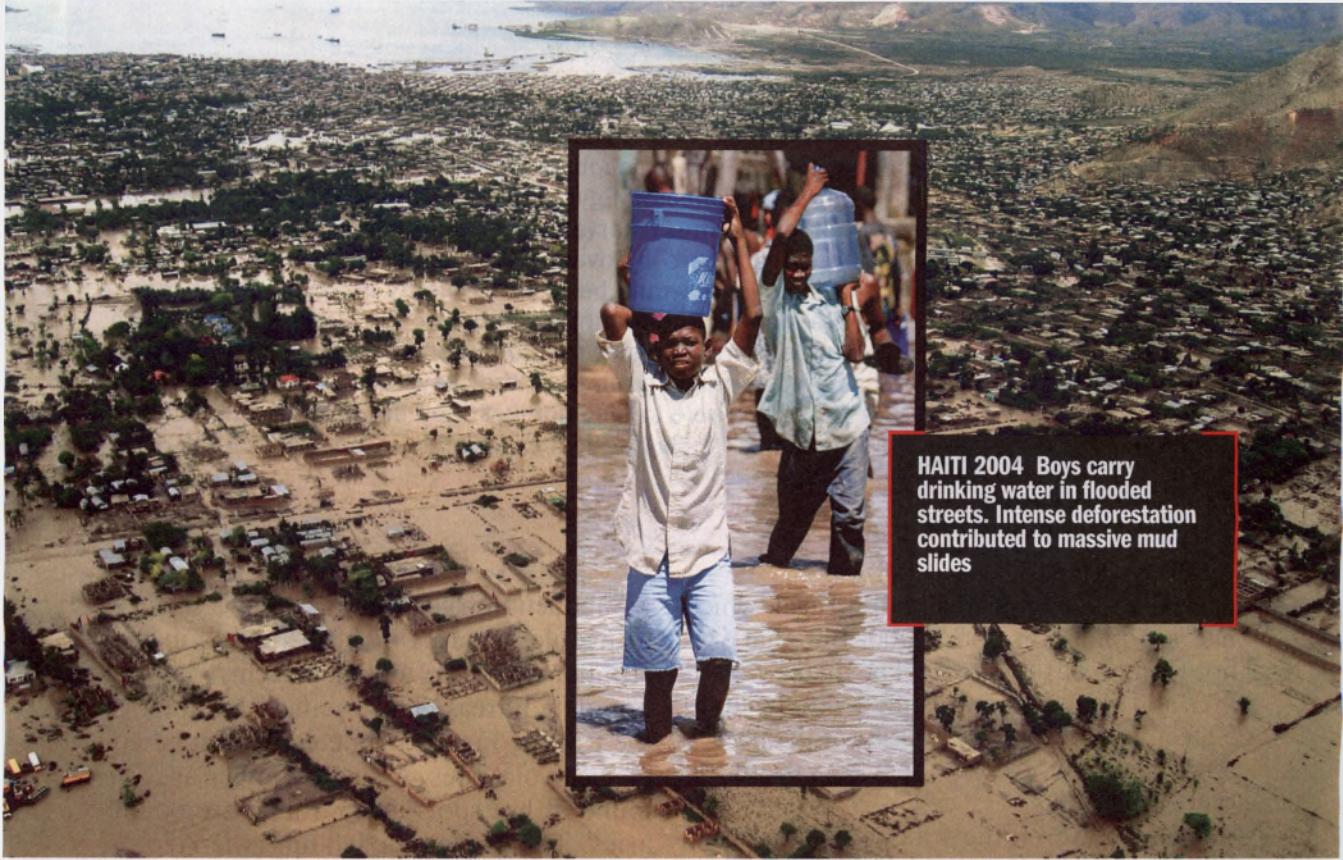
The tiny Pacific islands of Tuvalu may already be experiencing the effects of rising sea levels. *Smithsonian* magazine notes that data collected on the atoll of Funafuti shows that the sea level there has risen “an average of 0.22 inches annually over the past decade.”

In many parts of the world, population growth means more urban sprawl, more shantytowns, and more environmental degradation. These developments may tend to magni-

WHEN MORE THAN CORN GREW IN A FIELD

IN 1943 a corn farmer in Mexico saw something other than corn growing on his farm. While out in his field, he saw cracks, or fissures, opening up in the ground. By the next day, the fissures had become a small volcano. During the following week, the cone grew 500 feet, and a year later it towered 1,200 feet. Eventually, the cone, which stands at 9,100 feet above sea level, attained a final height of 1,400 feet. The volcano, called Paricutín, suddenly stopped erupting in 1952 and has been silent since.





HAITI 2004 Boys carry drinking water in flooded streets. Intense deforestation contributed to massive mud slides

fy the severity of natural disasters. Consider some examples.

Haiti is an island nation with a high population and a history of deforestation. A recent news report suggested that as bad as Haiti's economic, political, and social problems may be, nothing threatens the country's existence more than deforestation. This threat became tragically evident in 2004, when torrential rains caused mud slides that claimed thousands of lives.

Time Asia points to "global warming, dams, deforestation and slash-and-burn farming" as exacerbating factors in the natural disasters that have plagued South Asia. At the other extreme, deforestation can worsen drought by causing soil to dry out more quickly. In recent years, droughts in Indonesia and Brazil have paved the way for record-breaking fires in forests that are normally too wet to burn. Extreme weather, however, is by no means

the only cause of natural disasters. Many lands are subject to disasters that are generated deep inside the earth.

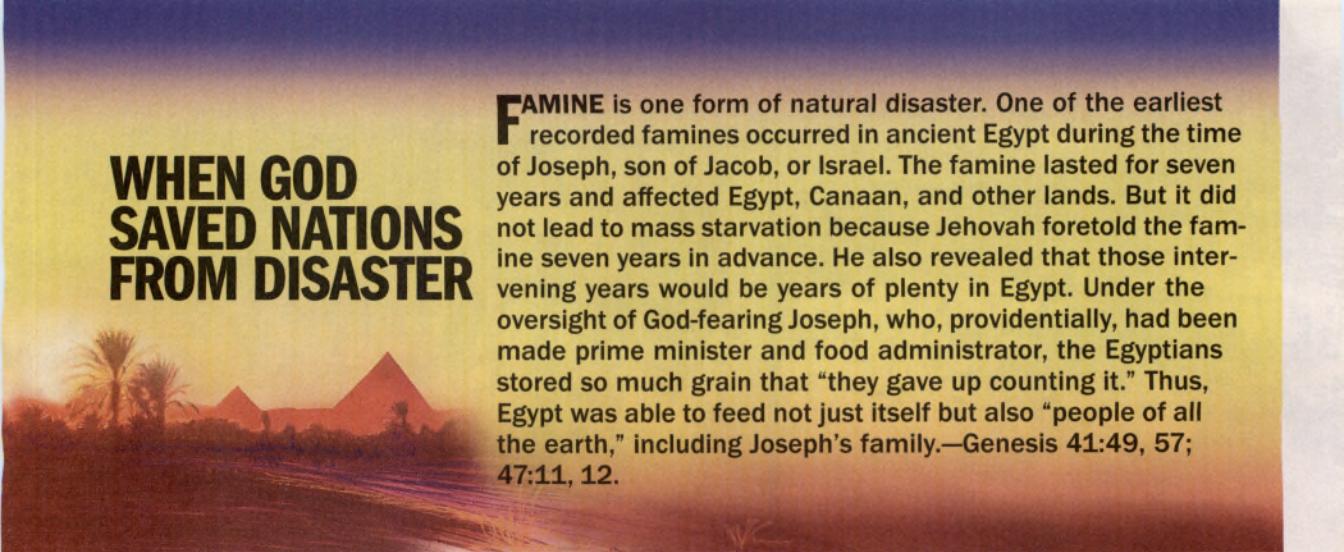
When the Ground Convulses

Earth's outer crust is made up of plates of various sizes that move in relation to one another. Indeed, there is so much movement in the crust that several million earthquakes may occur each year. Of course, many of these go undetected.

It is said that about 90 percent of all earthquakes occur along faults at the perimeter of plates. Although rare, sometimes very destructive quakes also occur within the plates. According to estimates, the deadliest quake in recorded history was one that struck three provinces in China in the year 1556. It may have claimed as many as 830,000 lives!

Quakes can also have lethal aftereffects. For example, on November 1, 1755, a quake

WHEN GOD SAVED NATIONS FROM DISASTER



FAMINE is one form of natural disaster. One of the earliest recorded famines occurred in ancient Egypt during the time of Joseph, son of Jacob, or Israel. The famine lasted for seven years and affected Egypt, Canaan, and other lands. But it did not lead to mass starvation because Jehovah foretold the famine seven years in advance. He also revealed that those intervening years would be years of plenty in Egypt. Under the oversight of God-fearing Joseph, who, providentially, had been made prime minister and food administrator, the Egyptians stored so much grain that “they gave up counting it.” Thus, Egypt was able to feed not just itself but also “people of all the earth,” including Joseph’s family.—Genesis 41:49, 57; 47:11, 12.

flattened the city of Lisbon, Portugal, which had a population of 275,000. But that was not the end of the horror. The quake caused fires and also tsunamis estimated to be up to 50 feet high, which raced in from the nearby Atlantic Ocean. All told, the city’s death toll exceeded 60,000.

Again, however, the scale of such disasters hinges to some extent on the human element. One factor is population density in high-risk areas. “Nearly half the world’s big cities now lie in areas of seismic risk,” says author Andrew Robinson. Another factor is buildings—the materials used and the structural quality. The adage, “Earthquakes don’t kill people; buildings do,” is all too often proved true. But what choice do people have when they are too poor to build earthquake-resistant structures?

Volcanoes—Builders and Destroyers

“At least 20 volcanoes will probably be erupting as you read these words,” states a report by the Smithsonian Institute in the United States. Broadly speaking, the theory of plate tectonics says that earthquakes and volcanoes will occur in similar regions—in rifts, especially oceanic rifts; in earth’s crust, where magma rises from the mantle through fissures; and at subduction zones, where one plate plunges under another.

Subduction volcanism is the biggest threat to people in terms of both the number of eruptions observed and their occurrence near populated areas. The Pacific Rim, dubbed the Ring of Fire, is peppered with hundreds of such volcanoes. A small number are also found at hot spots away from plate boundaries. The Hawaiian Islands, the Azores, the Galápagos Islands, and the Society Islands all appear to be the product of hot-spot volcanism.

Actually, volcanoes have played a long and constructive role in earth’s history. According to a university Web site, as much as “90% of all the continents and ocean basins are the product of volcanism.” But what causes some eruptions to be extremely violent?

Eruptions begin with an upwelling of magma from earth’s hot interior. Some volcanoes simply ooze lava, which seldom moves fast enough to catch people by surprise. But others explode with more energy than a nuclear bomb! The underlying factors include the composition and viscosity of the molten material that feeds the volcano and the amount of gases and superheated water dissolved in that material. As the magma nears the surface, captured water and gas rapidly expand. With the right magma composition, the effect

is much like soda that blasts from an opened beverage can.

Fortunately, volcanoes often give advance warning of an eruption. Such was the case with Mount Pelée on the Caribbean island of Martinique in 1902. An election was imminent in nearby St. Pierre, however, and politicians encouraged the people to stay, despite the ash, sickness, and fear that pervaded the city. In fact, most shops had been shut for days!

May 8 was Ascension Day, and many people went to the Catholic cathedral to pray for deliverance from the volcano. That morning, shortly before 8:00 a.m., Mount Pelée erupted, venting a searing mass of pyroclasts—ash, cinders, obsidian, pumice, and superheated gas—that ranged from 400 to 900 degrees Fahrenheit. Hugging the ground, the resulting dark cloud of death rushed down the mountain, overwhelmed the city, killed almost 30,000 people, melted the church bell, and set fire to the ships in the harbor. It was the deadliest eruption of the 20th century. Yet, it would not have been so deadly if the people had heeded the warning signs.

Will Natural Disasters Increase?

In their *World Disasters Report 2004*, the International Federation of Red Cross and Red Crescent Societies states that during the past decade, geophysical and weather-related disasters have increased by over 60 percent. "This reflects

longer-term trends," says the report, which was published before the catastrophic December 26 tsunamis in the Indian Ocean. To be sure, if populations in high-risk areas continue to climb and forests continue to decline, there is little cause for optimism.

Additionally, many industrialized countries continue to pump ever more greenhouse gases into the atmosphere. According to an editorial in the journal *Science*, procrastinating on emissions reduction "is like refusing medication for a developing infection: It guarantees that greater costs will have to be paid later." Pointing to those costs, a Canadian report on disaster mitigation stated: "Climate change can be argued to be the most pervasive and far-reaching environmental issue ever dealt with by the international community."

At present, however, the international community cannot even agree on whether human activities contribute to global warming, let alone how to manage it. This situation calls to mind the Biblical truth: "It does not belong to man . . . even to direct his step." (Jeremiah 10:23) Yet, as we shall see in the following article, the situation is not hopeless. In fact, the present woes, including the stormy conditions in human society, add to the evidence that relief is near.

Many nations continue to pump greenhouse gases into the atmosphere



SOON—AN END to All Disasters

“Children and children’s children. Hear! . . . Sooner or later this mountain takes fire. But before this happens there are mutterings and roarings and earthquakes. Smoke and flames and lightning are spewed forth, the air trembles and rumbles and howls. Flee so long as you can . . . If you despise it, if goods and chattels are dearer to you than life, it will punish your recklessness and greed. Do not trouble about your hearth and home, but flee without hesitation.”

THAT warning, from the book *Earth Shock*, by Andrew Robinson, was inscribed on a memorial tablet at Portici—a town at the foot of Mount Vesuvius in Italy—after the volcano erupted in 1631. The eruption claimed over 4,000 lives. “By a

twist of fate,” says Robinson, “it was this eruption of 1631 . . . that made Vesuvius a household name.” How so? The reconstruction of Portici led to the discovery of Herculaneum and Pompeii. Both cities had been smothered when Vesuvius erupted in 79 C.E.

Are you taking note of the warning that the present world is in its last days?



Pliny the Younger, a Roman who survived that disaster and later became a governor, wrote of unusual warning tremors. He, his mother, and others acted on the warning and survived.

A Warning Sign for Our Time

Today we are fast approaching the end of the economic, social, and political systems of the world. How do we know that? Because Jesus Christ foretold a series of world developments that would provide a sign indicating that God's day of reckoning is near. Like a volcano that rumbles, smokes, and spits out cinders, that composite sign includes great wars, earthquakes, famines, and pestilences—all of which have ravaged the world on an unprecedented scale since the year 1914.—Matthew 24:3-8; Luke 21:10, 11; Revelation 6:1-8.

But Jesus' warning sign also includes a message of hope. "This good news of the kingdom," he said, "will be preached in all the inhabited earth for a witness to all the nations; and then the end will come." (Matthew 24:14) Notice that Jesus called the Kingdom message "good news." It is indeed good news because God's Kingdom, a heavenly govern-

ment in the hands of Christ Jesus, will undo all the harm that humans have caused. Additionally, it will cause natural disasters to cease.—Luke 4:43; Revelation 21:3, 4.

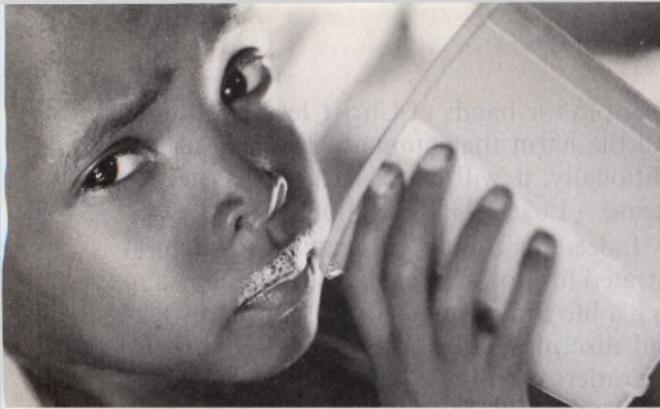
Indeed, as a man on earth, Jesus demonstrated his power over the elements by calming a life-threatening storm. In awe, his fearful disciples said: "Who really is this, for he orders even the winds and the water, and they obey him?" (Luke 8:22-25) Today, Jesus is, not a mere human, but a powerful spirit. Hence, controlling the natural elements so that they do no harm to his subjects will present no problem to him!—Psalm 2:6-9; Revelation 11:15.

Some may view all of this as wishful thinking. But keep in mind that Bible prophecy—unlike human promises and predictions—has a flawless record, including the prophecies we have seen fulfilled since 1914. (Isaiah 46:10; 55:10, 11) Yes, earth's peaceful future is guaranteed. Our future will be too if we take God's Word to heart and heed its loving warning concerning the earth-shaking events that are soon to occur.—Matthew 24:42, 44; John 17:3.

WHAT HOPE FOR OUR DEAD LOVED ONES?

WHEN we lose a loved one in death, we may become overwhelmed by grief. The Bible tells us that Jesus wept when his dear friend Lazarus died. Yet, just minutes later Jesus performed an astounding miracle—he raised Lazarus back to life! (John 11:32-44) In doing so, he gave all mankind solid grounds for faith in the amazing promise he had made earlier in his ministry when he said: "The hour is coming in which all those in the memorial tombs will hear [Jesus'] voice and come out." (John 5:28, 29) May the precious hope of a resurrection to life on a paradise earth comfort all who have lost loved ones in death.—Acts 24:15.





TRYING TO FEED A BILLION PEOPLE

EACH day, a billion people do not eat enough to satisfy their hunger. Yet, this atrocious condition should not exist, according to the United Nations.

"You have said that your first priority is the eradication of extreme poverty." So spoke United Nations Secretary-General Kofi Annan on September 8, 2000, to an assembly of the world's most powerful men and women. They had come together for the United Nations Millennium Summit, during which several of those leaders made frank comments on the problems of the world's poor. "Extreme poverty is an affront to humanity," said the vice president of Brazil. The prime minister of Great Britain went even further when he said: "There is a dismal record of failure in Africa on the part of the developed world that shocks and shames our civilization."

Those two speakers made plain that the nations had disgraced themselves by failing to do what they could to feed starving humans. As proof of their desire to improve living conditions for all on earth, those attending the summit committed themselves to action in an eight-part resolution that included the following: "We will spare no effort to free our fellow men, women and children from the abject and dehumanizing conditions of extreme poverty, to which more

than a billion of them are currently subjected. . . . We resolve further: To halve, by the year 2015, the proportion of the world's people whose income is less than one dollar a day and the proportion of people who suffer from hunger."

What progress has been made toward that noble goal since September 2000?

Actions Speak Louder Than Words

In 2003 the Global Governance Initiative of the World Economic Forum began assessing what had been done to achieve the goals outlined in the United Nations Millennium Declaration. The official report, released on January 15, 2004, states: "For all of its most important goals, the world is failing utterly to put forward the needed effort." Regarding hunger, the report states: "The problem is not an absolute shortage of food in the world —there is enough to go around. The problem

▲ **ETHIOPIA:** In this land some 13 million people depend on food aid. The child shown above is one of them

▼ **INDIA:** These students receive food at school



is that available food and adequate nutrition do not get to those who lack money."

On the overall problem of poverty, the report says: "The responsibility for the lack-lustre performance now lies mainly with governments, rich and poor. But a global economic system designed by the wealthy is too often stacked against the poorest. The wealthy countries, despite much rhetoric, show little interest in reforming that system or in substantially increasing development assistance targeted to the poorest." In the face of this reproof, the politicians continue to debate rather than act and the governments continue to maneuver, each for its own advantage. Meanwhile, the world's poor continue to have empty stomachs.

A fact sheet from the World Economic Forum, entitled "From Aspiration to Action," warns that "vast swaths of humanity will face increasing hunger unless international trade policies are changed, national policies focus on hunger and successful local efforts are multiplied." And who needs to make better policies and more "successful local efforts"? The very governments that in 2000 publicly declared their determination to improve the lot of all humanity.

One broken promise may lead to disappointment; several broken promises lead to distrust. By not keeping their word to care for the poor, the world's governments have reaped distrust. A mother of five living in a poor Caribbean country is able to feed her family one meal a day. She says: "I only care about whether we can eat. It doesn't matter who's in power. We've never gotten anything from anyone in power."

The Bible writer Jeremiah said: "I well know, O Jehovah, that to earthling man his way does not belong. It does not belong to man who is walking even to direct his step." (Jeremiah 10:23) The failure of human governments to solve the problems of the poor confirms that Bible truth.

"There is a dismal record of failure in Africa on the part of the developed world that shocks and shames our civilization."

—British Prime Minister Tony Blair

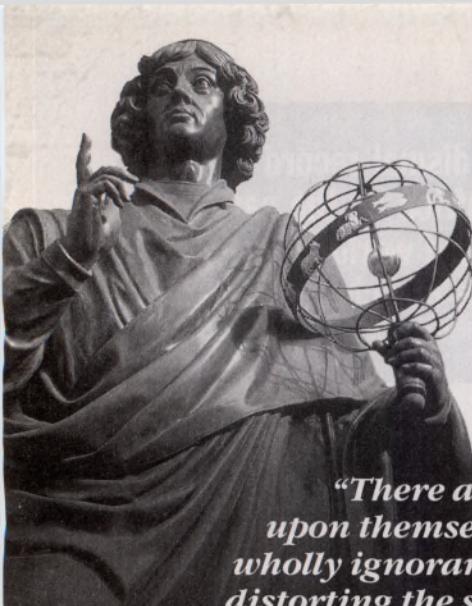
But there is a Ruler with both the power and the desire needed to solve man's problems, and the Bible identifies him. When that Ruler takes charge, no one will ever go hungry again.

A Basis for Hope

"To you the eyes of all look hopefully, and you are giving them their food in its season." (Psalm 145:15) Who is this One who is attentive to man's need for food? Our Creator, Jehovah God. Although the human race has suffered from famine and other problems for thousands of years, Jehovah has always been interested in people. He has observed the failure of human governments, and his infallible Word, the Bible, shows that he will soon replace them with his own government.

Jehovah says: "I, even I, have installed my king upon Zion, my holy mountain." (Psalm 2:6) This proclamation from the highest authority in the universe is cause for hope. While human rulers have often failed to help their subjects, Jesus Christ, as the King appointed by God, will bring benefits never seen by earth's poorest people.

Through this King, Jehovah will feed all hungry ones. "The Lord of hosts will provide for all peoples a feast of rich food," says Isaiah 25:6 in the *New American Bible*. Under God's Kingdom in the hands of Christ, people will never lack good food, no matter where they live. Regarding Jehovah, the Bible says: "You are opening your hand and satisfying the desire of every living thing."—Psalm 145:16.



The Man Who “Moved the Earth”

By *Awake!* writer in Poland

“There are certain ‘idle talkers’ who take it upon themselves to pronounce judgment, although wholly ignorant of mathematics, and if by shamelessly distorting the sense of some passage in Holy Writ to suit their purpose, they dare to reprehend and to attack my work; they worry me so little that I shall even scorn their judgments as foolhardy.”

NICOLAUS COPERNICUS wrote the above-quoted words to Pope Paul III. Copernicus included them in the preface to his groundbreaking work entitled *On the Revolutions of the Heavenly Spheres*, published in 1543. Regarding the views expressed in this work, Christoph Clavius, a 16th-century Jesuit priest, said: “The Copernican theory contains many absurd or erroneous assertions.” German theologian Martin Luther lamented: “The fool will upset the whole science of astronomy.”

Who was Nicolaus Copernicus? Why were his views so controversial? And how has he affected modern thinking?

A Young Mind Thirsting for Knowledge

Born on February 19, 1473, in Toruń, Poland, his given name was Mikołaj Kopernik. It was only later, when he started authoring his scholarly works, that Mikołaj adopted the Latinized name Nicolaus Copernicus. His father, a merchant who traded in Toruń, had four children; Nicolaus was the youngest. When Nic-

olaus was 11 years old, his father died. An uncle named Lucas Watzenrode took charge of Nicolaus and his siblings. He helped Nicolaus obtain a good education, encouraging him to become a priest.

Nicolaus' education started in his hometown but later continued in nearby Chełmno, where he learned Latin and studied the works of ancient writers. At 18, he moved to Kraków, then the capital of Poland. Here he enrolled in the university and pursued his passion for astronomy. Upon completing his studies in Kraków, Nicolaus' uncle—who by now had become the bishop of Warmia—asked him to move to Frombork, a city on the Baltic Sea. Watzenrode wanted his nephew to take the position of canon of the cathedral.

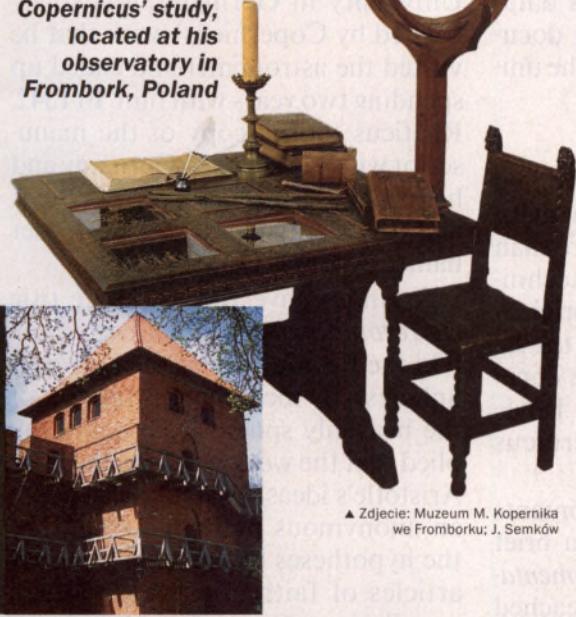
However, 23-year-old Nicolaus wanted to quench his thirst for knowledge and convinced his uncle to let him study canon law, medicine, and mathematics at the Italian universities of Bologna and Padua. There Nicolaus associated with



*An observational instrument
used by Copernicus*

Zbiory i archiwum fot. Muzeum Okręgowego w Toruniu

*Items from
Copernicus' study,
located at his
observatory in
Frombork, Poland*



▲ Zdjęcie: Muzeum M. Kopernika we Fromborku; J. Semków

the astronomer Domenico Maria Novara and the philosopher Pietro Pomponazzi. Historian Stanisław Brzostkiewicz says that Pomponazzi's teachings liberated "the young astronomer's mind from the grasp of medieval ideology."

In his spare time, Copernicus studied the works of ancient astronomers, becoming so immersed in them that when he found the Latin works incomplete, he learned Greek so that he could study the original texts. By the end of his schooling, Nicolaus had become a doctor of canon law, a mathematician, and a medical doctor. He was also an expert in Greek, being the first person to translate a document from Greek directly into Polish.

Hatching a Revolutionary Theory

When Copernicus returned to Poland, his uncle the bishop appointed him as his personal secretary, adviser, and doctor—a prestigious position. During the following decades, Nicolaus held a variety of administrative positions, both religious and civil. Despite his workload, he continued his study of the stars

and planets, gathering evidence to support a revolutionary theory—that the earth was not the stationary center of the universe but, in fact, moved around the sun.

This theory contradicted the teachings of the revered philosopher Aristotle and disagreed with the conclusions of the Greek mathematician Ptolemy. In addition, Copernicus' theory denied the seemingly obvious "fact" that the sun rose in the east and moved across the sky to set in the west, while the earth remained at a standstill.

Copernicus was not the first person to conclude that the earth revolved around the sun. Greek astronomer Aristarchus of Samos proposed this theory in the third century B.C.E. Followers of Pythagoras had taught that the earth as well as the sun were in motion around a central fire. However, Ptolemy wrote that if the earth moved, "animals and other weights would be left hanging in the air, and the Earth would very quickly fall out of the heavens." He added: "Merely to conceive such things makes them appear ridiculous."

Ptolemy backed Aristotle's idea that the earth stood still at the center of the universe and was surrounded by a series of clear spheres nestled within each other, upon which the sun, the planets, and the stars were fixed. He assumed that the movement of these clear spheres accounted for the movement of the planets and the stars. Ptolemy's mathematical formulas explained, with some degree of accuracy, the movement of the planets in the night sky.

It was the deficiencies in Ptolemy's theory, though, that led Copernicus to search for an alternative explanation for the strange movements of the planets. To substantiate his theory, Copernicus reconstructed the instruments used by the ancient astronomers. Although simple by modern standards, these devices allowed him to calculate the relative distances between the planets and the sun. He spent years determining the precise dates on

which his predecessors had made certain important astronomical observations. Armed with this data, Copernicus began work on the controversial document that shifted mankind from the center of the universe.

Controversy Over the Manuscript

Copernicus spent the last years of his life refining and supplementing the arguments and mathematical formulas that underpinned his theory. More than 95 percent of the final document contains technical details supporting his conclusions. This original handwritten document survives and is kept at the Jagiellonian University in Kraków, Poland. The document is untitled. Therefore, astronomer Fred Hoyle writes: "We do not really know how Copernicus wished his book to be named."

Even before the work was published, its contents aroused interest. Copernicus had published a brief summary of his ideas in a work called *Commentariolus*. As a result, reports of his research reached Germany and Rome. As early as 1533, Pope Clement VII heard of Copernicus' theory. And in 1536, Cardinal Schönberg wrote to Copernicus, urging him to publish a full account of his ideas. Georg Joachim

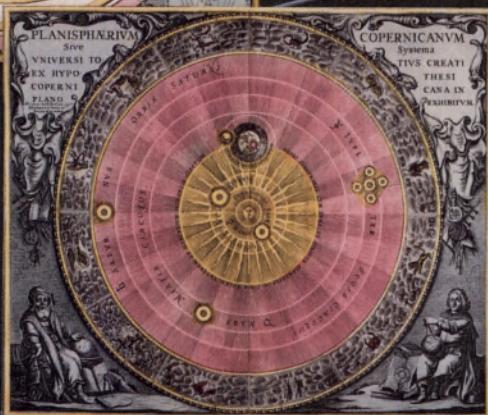
Rheticus, a professor at Wittenberg University in Germany, was so intrigued by Copernicus' work that he visited the astronomer and ended up spending two years with him. In 1542, Rheticus took a copy of the manuscript with him back to Germany and handed it to a printer named Petreius and to a clergyman and proofreader named Andreas Osiander.

Osiander gave the work the title *De revolutionibus orbium coelestium* (On the Revolutions of the Heavenly Spheres). By including the phrase "of the heavenly spheres," Osiander implied that the work was influenced by Aristotle's ideas. Osiander also wrote an anonymous preface, stating that the hypotheses in the book were not articles of faith and were not necessarily true. Copernicus did not receive a copy of the printed book, with its unauthorized changes and compromises, until just hours before his death in 1543.

The earth-centered system
© 1998 Visual Language



The sun-centered system
© 1998 Visual Language



On the Revolutions —A Revolutionary Work

Osiander's changes initially spared the book from criticism. Italian astronomer and physicist Galileo later

wrote: "When printed, the book was accepted by the holy Church and it has been read and studied by everyone without the faintest hint of any objection ever being conceived against its doctrines. Yet now that manifest experiences and necessary proofs have shown them to be well grounded, persons exist who would strip the author of his reward without so much as looking at his book."

The Lutherans were the first to call the book "an absurdity." The Catholic Church, despite initially reserving judgment, decided that the book was in conflict with its official doctrine and in 1616 added Copernicus' work to the list of banned books. It was not removed from this list until 1828. In his introduction to an English translation of the book, Charles Glenn Wallis explains: "The dissensions between Catholics and Protestants made both sects fearful of any scandal which might appear to undermine respect for the Church of the Bible, and consequently they be-

came over-literal in their reading of Scripture and were inclined to condemn any assertion which could be construed as contradicting any literal interpretation of any passage in the Bible."^{*} Regarding the supposed conflict between Copernicus' theory and Bible teaching, Galileo wrote: "[Copernicus] did not ignore the Bible, but he knew very well that if his doctrine were proved, then it could not contradict the Scriptures when they were rightly understood."

Today, Copernicus is revered by many as the father of modern astronomy. True, his description of the universe was refined and improved by later scientists, such as Galileo, Kepler, and Newton. However, astrophysicist Owen Gingerich observes: "It was Copernicus who by his work showed us how fragile time-honored scientific conceptions can be." Through research, observation, and mathematics, Copernicus overturned entrenched religious and scientific misconceptions. In the minds of men, he also "stopped the sun and moved the earth."

* For example, the account recorded at Joshua 10:13, which speaks of the sun being made to stand still, was used to assert that the sun, not the earth, normally moves.

On the Revolutions of the Heavenly Spheres

Copernicus divided his work into six parts.

Listed below are some of the key ideas appearing in his book.

- Our planet is one of many "travelers" whose movements are governed by 'the sun sitting on its royal throne.'
- The planets are orbiting the sun in the same direction. The earth is one of them, spinning on its own axis once a day and orbiting the sun once every year.
- Arranged in order of distance from the sun, Mercury is closest, followed by Venus, Earth and its moon, Mars, Jupiter, and finally Saturn.

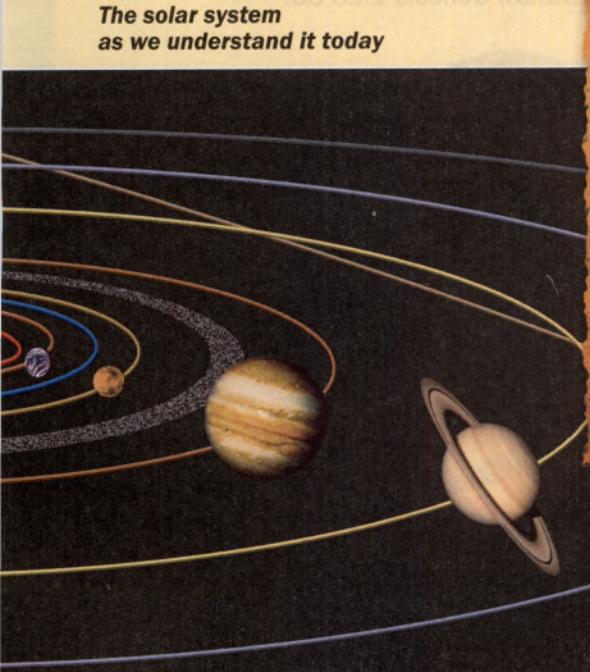
Title page of Copernicus' work: Zbiory i archiwum fot.
Muzeum Okręgowego w Toruniu

NICOLAI CO
PERNICI TORONENSIS
DE REVOLVATIONIBUS SPHERARUM
UNIVERSALium, LIBRI VI.

Habens in hoc opere tres volumina nava, & modis
dissimilat ictus. Mense Martiano, non fixarum,
quoniam orationem, non ex eodem tempore stat etiam
vix admodum difficulter estimare. Quod
vix rufus ac admodum hysperboreus esse
possit. I habet enim Tiberius, quod dicitur, &
non invenimus in qua parte spacio facili
me calidius pomerit. Igne eme, lego fructus.

Dissimilat ictus.

Nostrique quodlibet. Pervenit
Anno 1613. M. 11. 1.



By Awake! writer in Italy

Species Threatened With Extinction

The Red List of Threatened Species, released by the World Conservation Union (IUCN), with headquarters in Gland, Switzerland, is an indicator of the state of the health of the world's plants and animals. The 2004 Red List contained more than 15,500 species.

One of the main threats to endangered species is human activity. Rather than preserving the delicate balance of nature, indispensable for his own survival, man continues to compromise it through pursuit of activities that turn out to be highly dangerous to other species. Sadly, many species are thus lost and along with them natural resources that may have proved invaluable.

One of the animals on last year's Red List was the short-beaked common dolphin, pictured here. Its numbers in the Mediterranean have declined by more than 50 percent over the last 30 to 45 years, and it is now considered endangered. According to IUCN, contributory factors have been "a reduction in the

availability of dolphin prey in the Mediterranean through a combination of environmental changes, overfishing, and habitat degradation." It is also thought that high levels of man-made toxic chemicals found in Mediterranean dolphins "may cause immune suppression and reproductive impairment."

The Creator will not tolerate indefinitely the thoughtless and selfish who degrade and destroy. On the contrary, Bible prophecy indicates that "the appointed time" is approaching when he will "bring to ruin those ruining the earth." Jehovah God will then reestablish conditions in which humans will be competent guardians of "every living creature" and of 'all vegetation on the surface of the earth.'—Revelation 11:18; Genesis 1:28-30.

© Goran Ehme/SeaPics.com

Short-beaked common dolphins



The black-browed albatross is also on the endangered list



Young People Ask . . .

Why Am I Drawn to the Wrong People?

"I knew that I shouldn't get too familiar with him, but it was something that I allowed. I couldn't believe that a man would want to spend time with me."—Nancy.*

"I would go to the skating rink by myself, and before long I started associating regularly with the 'friends' I made there. Pretty soon, I was living an immoral lifestyle."—Dan.

BOTH Nancy and Dan had a strong spiritual start in life. Nancy was raised in a God-fearing family and began sharing her faith with others at nine years of age. Dan entered the full-time ministry as a teenager. Yet, both had serious setbacks in their spiritual life. Why? They associated with the wrong people.

Have you ever found yourself unexpectedly drawn to someone whom you knew, deep down, to be a bad influence on you? The individual might have been a classmate with whom you shared common interests—or even someone of the opposite sex to whom you felt romantically attracted.

Likely you called to mind the Bible's counsel: "Bad associations spoil useful habits." (1 Corinthians 15:33) But are all people who do not worship Jehovah *bad* association? What if they have some likable, even admirable, qualities? Then, too, what of a person who is a fellow believer yet is setting a poor



spiritual example? Before answering these questions, let us consider how and why such attractions may occur.

What Is Behind the Attraction?

Since all humans are made in God's image, it can be expected that some who do not know Jehovah will manifest fine qualities. As a result, you may find some people to be respectable, even likable, although they do not worship the true God. Should you completely shun such ones simply because they are not acquainted with Bible truths? By no means. When the Bible counsels us to "work what is good toward all," that includes those who do not share your Christian beliefs. (Galatians 6:10) So being careful about choosing your close associates does not mean that you should act as if you were superior to others. (Proverbs 8:13; Galatians 6:3) Such conduct would reflect poorly on your Christian beliefs.

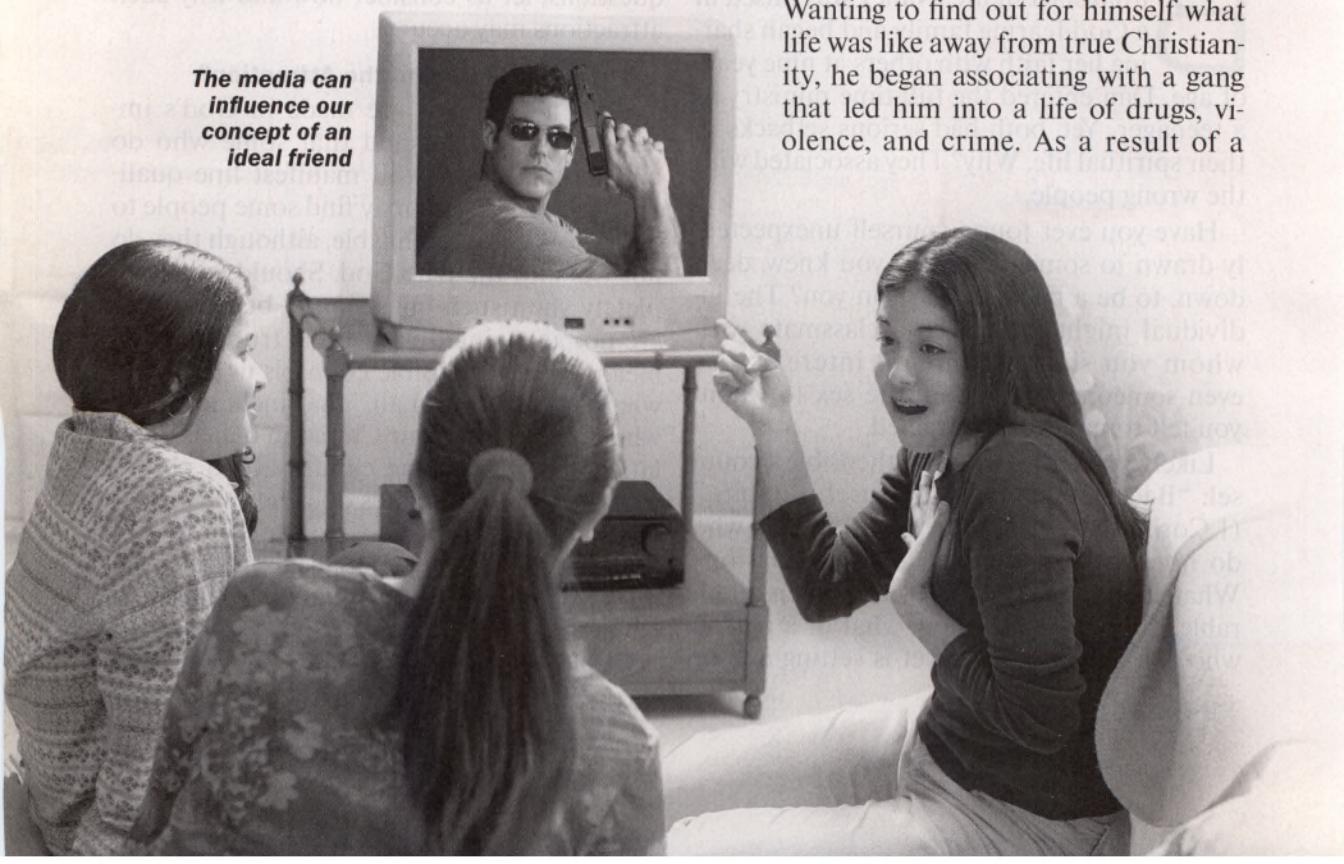
Some Christian youths, however, have gone further than being pleasant; they have formed

* Names have been changed.

close bonds with individuals who have little or no interest in spiritual things. Dan, mentioned earlier, had become a very good roller skater. The people he began to associate with regularly at the local rink were not Christians. Eventually, Dan joined his new "friends" in engaging in immoral conduct and experimenting with drugs. Realizing that his lifestyle was no longer compatible with Christianity, Dan abandoned his ministry and stopped attending congregation meetings. It was several years before he gathered the strength to make the necessary changes to return to true worship.

Melanie was drawn to a fellow believer who was not faring well spiritually. "I was told she needed some encouragement, so I started to associate with her," Melanie explained. Of course, the Bible encourages Christians to "support the weak." (1 Thessalonians 5:14) But Melanie began joining her new friend at bars, where further associations led her into reproachful conduct.

The media can influence our concept of an ideal friend



The Role of Family

Family dynamics can be a factor in your forming attractions. Michelle wondered why she always seemed to be attracted to boys who were emotionally distant and uncaring. She concluded that they reminded her of her father, to whom she never felt close and who never seemed to have time for her. She believes that she had become so accustomed to seeking approval and attention from an unavailable man that she unwittingly felt drawn to such relationships.

By contrast, a young person raised by Christian parents may be curious about how others live, feeling that his or her parents have been overly protective. Whether that is the case or not, is trying to compensate by associating with 'friends of the world' the answer? (James 4:4) Consider what happened to Bill.

Although from an early age he was taught the Scriptures by his mother, Bill chose not to dedicate his life to Jehovah, feeling that doing so would restrict his freedom. Wanting to find out for himself what life was like away from true Christianity, he began associating with a gang that led him into a life of drugs, violence, and crime. As a result of a

high-speed chase with the police in pursuit, he was injured and spent months in a coma. The doctors felt it likely that he would not live. Happily, Bill recovered. But he is blind and disabled. He learned from hard experience and is now a dedicated Christian. But Bill has also come to realize that learning the hard way can have lifelong consequences.

Other Influences

Sometimes the entertainment media influence a youth's ideas about what an ideal friend is. For instance, it is not uncommon for books, television programs, movies, and music videos to depict a hero who appears harsh or jaded at first but who is later revealed to have more compassionate qualities at heart. The impression given is that people who appear callous and self-centered are, in fact, likely to be sensitive and caring. Further, the idea may be conveyed that a good friend, often one of the opposite sex, is just what is needed to bring these finer qualities to the surface. Granted, the concept sells stories. How often, though, do you think this romantic fantasy proves true in real life? Sadly, some youths have fallen for such unwholesome fantasies and befriended—even married—a selfish, violent, person and then waited in vain for the “transformation” into a sensitive soul.

Consider one more reason why some become attracted to the wrong people: They consider themselves undesirable and therefore settle for almost anyone who seems attracted to them. Nancy, mentioned previously, knew what the Bible says about marrying “only in the Lord.” (1 Corinthians 7:39) Yet, she had always considered herself unattractive and was therefore flattered when a workmate who did not share her faith showed a romantic interest in her. She started going out with him and came perilously close to committing sexual immorality.

As the foregoing experiences show, there are numerous reasons why a young Christian

may feel drawn to people who are a bad influence—and there seem to be just as many ways to rationalize forming close friendships with such ones. Still, friendships of that kind inescapably yield distressing, even disastrous, results. Why?

The Power of Friendship

The fact is, you become like your friends. In this way those with whom we spend our time exert great power and influence over us. Proverbs 13:20 shows that this power can be for good or for bad: “He that is walking with wise persons will become wise, but he that is having dealings with the stupid ones will fare badly.” Close friends, like two people riding in the same car, inevitably head in the same direction and arrive at the same destination. So ask yourself: ‘Does the road my friend is on lead where I want to go? Will it take me closer to my spiritual goals and aspirations?’

Granted, making an honest assessment can be difficult. Strong feelings may be involved. But are feelings alone a reliable guide in the selection of friends? You may have heard the oft repeated advice, “Follow your heart.” But Proverbs 28:26 states: “He that is trusting in his own heart is stupid.” Why? Because “the heart is more treacherous than anything else and is desperate.” (Jeremiah 17:9; Numbers 15:39) To be treacherous is to be disloyal or false or to be a double-crosser. Would you trust a person who is known as a deceiver and a traitor? Our figurative heart can be devious. Thus, a relationship is not necessarily healthy just because it feels right.

A far more reliable guide is God’s Word. Unlike your imperfect heart, Bible principles will never betray you or let you down. How can Bible principles help you determine whether someone is likely to prove to be a wholesome friend? And how can you avoid making a destructive choice in choosing a lifetime friend—a marriage mate? These questions will be considered in a future article.

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BY AWAKE! WRITER IN SPAIN

When Survival Depends on

IN THE world of insects, each day presents two pressing problems: how to find enough to eat and how to avoid being eaten. Insects are tempting morsels for birds, frogs, and lizards. For many insects, survival depends on blending into their surroundings.

To achieve this disappearing act, a number of insect species display remarkable camouflage. The effectiveness of the camouflage goes far beyond any disguise human ingenuity has produced. Consider three striking examples.

● **Dead-leaf butterflies.** The brown underside of their wings is practically indistinguishable from a dead leaf. The design includes the coloring as well as the veins and stem of the leaf. The subterfuge is so successful that the butterflies can rest on green foliage and yet look exactly like a dead leaf that has fallen from the canopy above.

● **Bush crickets, or katydids.** Many bush crickets survive, not by imitating *dead* leaves, but by mimicking *green* leaves. "This resemblance is not just in shape and colour: it also extends to the pattern of veins and the mot-

tlings of fungus attack," explains one source. If you look closely at the accompanying photo, you will see the small mottles, or blemishes, on the insect's wing, giving its disguise even more realism.

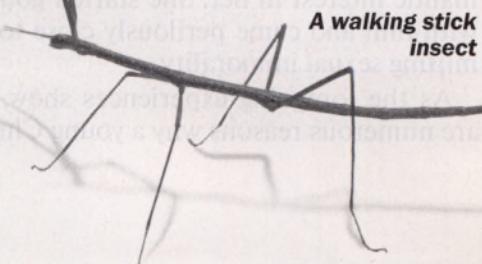
● **Treehoppers.** These small insects invariably pass unnoticed. And therein lies the key to their survival—they blend into the background by imitating a row of thorns. In this case, each insect looks like a thorn, and a whole phalanx of treehoppers lined up on a branch give it a thorny appearance. Only a very close inspection will reveal that the "thorns" are nothing more than tiny treehoppers.

The range of insect camouflage is almost as remarkable as its precision. A caterpillar from Costa Rica looks just like bird droppings, whereas stick insects can barely be distinguished from—you guessed it—sticks. There is a South African locust that closely resembles a stone, and a bug found in Israel perfectly mimics the flowering plant on which it feeds.

Whatever form the subterfuge may take, it provides protection for the insect and gives us a fascinating glimpse into the astonishing variety in creation.

In Our Next Issue

- Life Without Fear—Is It Possible?
- Toys—Past and Present
- Is Astrology the Key to Your Future?



Subterfuge



A dead-leaf butterfly

Zoo, Santillana del Mar,
Cantabria, España



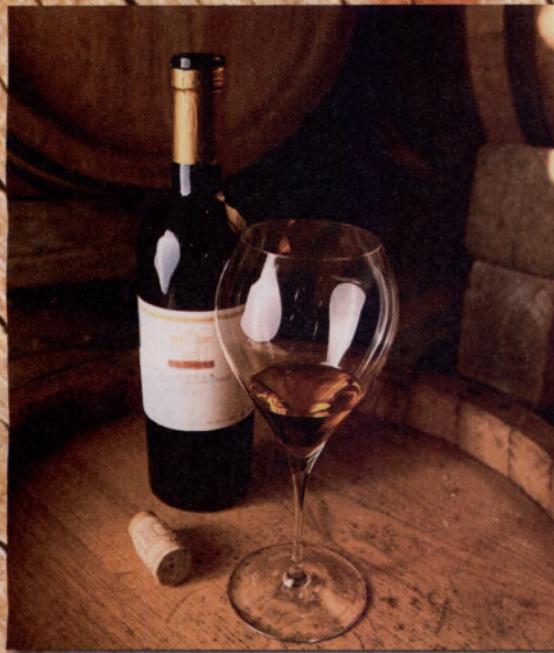
A bush cricket

Treehoppers



**A caterpillar that
resembles bird droppings**

© Gregory G. Dimijian/Photo Researchers



© Sandro Vannini/CORBIS

CHOCOLATE, nutmeg, vanilla, or wet dog—these are some of the imaginative terms winemakers use to describe the taste of wine. What factors produce these complex flavors? The grape variety, the soil quality, and the weather all contrib-

ute. Since the first century, though, winemakers have added another ingredient to the more than 400 compounds influencing the flavor and aroma of wine. This potent product is wood—not just any wood, but a specific type known as white oak.

Only top-quality oak is used for wine barrels

Logs are split with a hydraulic jack

The wood must be sawed with the grain, otherwise the staves will not be watertight



How did wine and wood first form a partnership? And why is oak the timber of choice for makers of quality wines?

Wood Replaces Skin and Clay

Early in recorded history, man discovered the process of making wine. (Genesis 9:20, 21) Winemakers poured grape juice into vessels made of clay or bottles made of animal skin, where it fermented. Skin and clay remained the standard mediums of storage and transport up to the time of Christ. (Matthew 9:17) About this time, though, another method of storing and transporting wine started to gain popularity.

The first-century historian Pliny the Elder records that craftsmen living in Gaul, now France, devised a method of shaping and joining timber to form barrels. Barrel makers, called coopers, handed down from generation to generation the skills necessary to make these useful vessels. In addition to making the "tight" barrels, which could carry such liquids as wine and oil, coopers manufactured "slack" barrels, which were not watertight. But they were ideal for carrying dry

items, such as flour or nails. In an age when the movement of goods depended on human and animal muscle power, the invention of the barrel was a great step forward. Why?

A Technological Leap

The barrel's bulged shape not only made it very strong but also allowed it to function as a wheel. A square crate packed with heavy goods had to be moved by several men or a beast, whereas a barrel containing the same goods could be rolled and maneuvered by just one man. Because barrels were more robust than clay vessels and easier to move than crates, they stimulated the trade in all manner of commodities throughout the centuries.

Today steel, plastic, and cardboard containers have largely replaced those old-fashioned vessels. Even so, the cooper's craft not only survives but also thrives. In California, U.S.A., alone, the cooperage industry employs some 12,000 people and generates over \$211 million annually. Just one cooperage in Napa Valley, a famous California wine region, produces over 100,000 barrels a year. How are such barrels made?

Rough boards ready to be transformed into barrel staves



After the barrels are heated over a brazier, the staves are held together with iron hoops



Wine is aged in oak barrels to enhance its flavor



Seguin-Moreau, France

Oak Barrel or Oak Powder?

Some white wines, such as chardonnay, are aged in oak. However, not all of them are aged in oak barrels. Some winemakers achieve an oak flavor by inserting slats of oak into stainless steel vats of wine or by adding oak shavings or powder to the wine as it ages in steel or concrete vessels.

From the Forest to the Cooper's Fire

The most highly valued barrels start life in the oak forests of France. Because of the quality and abundance of the timber, about 45 percent of all wine barrels are made in that country. After lumberjacks fell trees that are between 100 and 200 years old, a mill saws them into logs and splits them carefully along the grain, producing rough boards called staves. If the staves are split incorrectly, they will break when bent or will ooze wine when the barrel is filled. The staves are stacked in open yards where sun, wind, and rain slowly leach bitter tannins from the wood, while enhancing the oak's aromatic compounds. The staves must weather from one to four years before a cooper will use them.

Stepping into a cooperage can be like stepping back in time. The oak-scented air echoes with the sound of saws, planes, and hammers. Following a time-honored tradition, the cooper shapes the staves so that they are broadest in the middle and

taper toward the ends. He bevels the edges to an exact angle so that if stood side by side, the staves would form a cylinder. Then he hammers strong iron hoops over one end of a circle of staves, making the unfinished barrel resemble a flared skirt.

Heaving the heavy barrel over a fire formed on the floor, he warms the wood. Afterward, he dampens the inside of the half-made vessel with water, steaming and softening the timber. Next, the cooper loops a rope or cable around the splayed staves at the other end of the barrel and draws it tight, bending the staves into the familiar barrel shape. Then he bangs the remaining temporary iron hoops into place; the final hoops are fitted later. At this stage, the barrel is open at both ends.

"Toasting" the Barrel

Once he forms the barrel, the cooper cuts a groove on the inside at each end of the vessel so that he can later insert flat circles of timber, called heads, to seal the barrel. The heads are made from slats of oak with thin strips of reed inserted between them. The reeds act as caulking to ensure that the timber remains watertight should it swell or shrink unevenly.

Coopers in Paris, early 20th century

© Cliché Bibliothèque nationale de France, Paris



Before the heads are inserted, the cooper may again place the barrel over the open fire, toasting, or lightly burning, the inside with the flame. The toast level, from lightly to heavily charred, is determined by the wine-maker who ordered the barrel. Toasting the wood in this manner intensifies the flavors that the oak will impart to the wine. The heads may also be toasted separately. The cooper then fits the heads and bores a bung-hole in the side of the barrel so it can be filled and emptied. Finally, he sands and cleans the outside of the barrel and ships it to the winery.

"A Winemaker's Spice Rack"

"Oak is the ideal material for aging our wines," says Bob, the manager of a California winery. Guiding a tour group through the winery, he explains: "Oak is the only timber that has both the strength to make sturdy barrels and the ability to improve the flavor of the wine." Pointing to the rows of barrels, Bob says: "As wine ages in a barrel, the vessel acts like a lung. Oxygen slowly seeps through the timber into the barrel, causing the wine to oxidize. This process stabilizes the wine's color and softens its flavor. Meanwhile, the barrel transpires alcohol and water, which evaporate into the atmosphere. The lees, or yeast sediment, settle to the bottom of the barrel, and sugars and tannins from the oak slowly leach into the wine, imparting their distinctive flavor characteristics. Depending on the style of wine, the batch may be aged in the barrel for 18 months or more before bottling."

Bob continues: "Wine barrels have a limited life expectancy. We age some of our premium wines only in new oak barrels because after one use most of the flavors have been extracted from the wood. Barrels can be used more than once, but after several uses they may start to impart undesirable flavors to the wine."

Explaining why the origin of the oak is important, Bob says: "White oak grown in the



Testing wine matured in barrels, c. 1900

© Cliché Bibliothèque nationale de France, Paris

soil of Limousin, France, will convey flavor characteristics different from those of the same species grown in Missouri, in the United States." Why the difference? "The soil composition, the weather, and the age of the forest are among the many factors. The way the timber is dried, whether kiln-dried or air-dried, also alters oak's effect on wine. The best wine barrels are made only from air-dried timber. Most of our barrels are made of either American or French oak or a combination of the two, but oak suitable for barrel making is also grown in China and Eastern Europe."

At the end of the tour, Bob says: "All these options—the type of oak used, the toast level, and the amount of time the wine is kept in the barrel—are like a winemaker's spice rack, allowing him to alter the flavor of the final product. So the next time you enjoy a glass of quality red wine, contemplate not only the time and effort that went into producing the wine but also the skill involved in building the barrel that nurtured the vintage."

Watching the World

Meeting the Challenge of Meetings

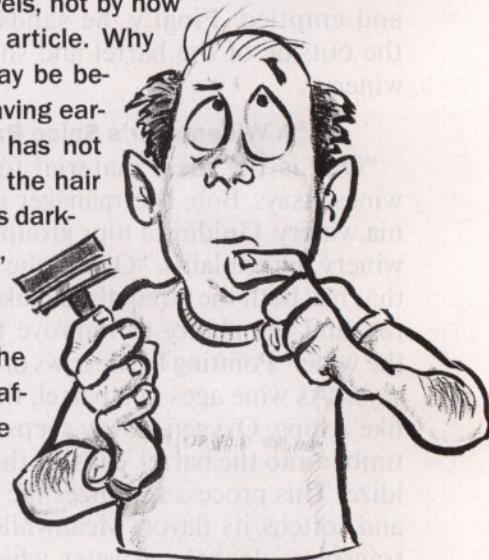
Many companies are seeing a need to keep business meetings short and even to do away with unnecessary meetings, reports *The New York Times*. So to curb waste of time at meetings, some executives have resorted to the use of such desperate measures as stopwatches, whistles, and uncomfortable chairs, as well as having attendees stand rather than sit. Apparently, the executives are not alone in their view. In a survey of over 600 workers, "meetings that last too long" topped the list of time wasters. Patti Hathaway, author of a book that gives advice on handling situations at work, recommends that executives first look at the agenda to decide whether a meeting is really necessary. If the purpose of a proposed meeting is simply to disseminate information, then consider whether the information can be sent by e-mail.

Underground Nursery

"A steamy mine is a perfect environment for tree growing. For starters there's a constant humidity and geothermal heat of 25C [77 degrees Fahrenheit] year-round," says the *Toronto Star* newspaper. Since 1986, Inco Limited, a

The Myth of Hair Growth

"Cutting or shaving your hair will not affect its rate of growth, texture or thickness," states a health-and-fitness article in *The New York Times*. The myth that hair will grow back faster and thicker if cut or shaved has been around for many years. However, repeated studies since the 1920's have shown that "the length, texture and coarseness of your hair are determined by genetics and hormone levels, not by how often you shave," says the article. Why does the myth persist? It may be because many people start shaving early in life, when hair growth has not reached its highest rate and the hair is of lighter color. Also, "hair is darker and rougher at its roots, so removing the tips gives the appearance of coarser hair," states the *Times*. "The bristly stubble that emerges after shaving may also be more noticeable than the same amount of growth in hair that is already long."



mining and metals company, has been quietly running an underground nursery. At the 4,600-foot level of their Creighton mine, located near Sudbury, Canada, the nursery grows 50,000 seedlings each season. Storage tanks equipped with timers irrigate the baby trees with 530 gallons of both fertilizer and water per day. To give the effect of sunlight, thirty 1,000-watt lightbulbs "stay on 24 hours a day the first week, then 18 on and 6 off for three weeks

and then 12 on and off—just like outdoors—the rest of the time," says the paper. Growing season starts in late January, and by late May the red pine and jack pine seedlings are ready to be planted on and around the mining company's property. Some of the tiny trees are also donated to community groups.

Gardening Reduces Stroke Aftermath

"Gardening brings people the most zest for life after a stroke," reports the German

newspaper *Gießener Allgemeine*. Six months after being released from rehabilitation, 70 patients who had suffered a stroke were asked which activities brought them contentment. Such things as housework, shopping, cooking, reading, walking, driving, working at their job, and a number of social events were suggested. But gardening was the only activity named as increasing contentment in life. According to occupational therapist Brigitte Oberauer, gardening "makes it easier for stroke patients to focus on certain things and to keep concentrating. It busies the senses and delivers the message that new things are growing and life goes on. This is an important message after a serious illness." Work-

ing outside may also break the isolation of staying indoors, increase mobility, and train one's sense of balance.

Crisis Looms in Care of the Elderly

"If you don't raise living standards now and begin to put in place some sort of safety net for the elderly, in 2030 or 2040 you could see a humanitarian crisis of colossal proportions," warns Richard Jackson, director of the Global Aging Initiative in Washington, D.C. According to the international edition of *The Miami Herald*, increased longevity and declining fertility rates have produced an "elderly boom" worldwide. For example, the number of elderly in Mexico is expected to rise from 5 percent to 20 per-

cent by 2050. A similar burgeoning elderly population exists in many developing nations, such as China, where an expected 332 million senior citizens will live by the middle of the century. It is now "a race against time" to provide the "mammoth social services" needed for the elderly, the article stated.

Home Remedies for Children?

The indiscriminate use of medication for children has become a habit in Brazil and other countries, reports *Folha Online*. Many families keep a stock of medicines on hand in their home. But "contrary to what many people think, even medications that can be bought without a prescription can cause irreversible damage to a child's health—if used incorrectly or unnecessarily." And many ailments in children, such as the common cough, will go away on their own without the use of medication. "We have a culture of resolving any problem with medication," says Lúcia Ferro Bricks, a pediatrician at the Children's Institute of the Clinics' Hospital in São Paulo. Food supplements are also abused, as in most cases a proper diet would satisfy the child's needs. "When parents ask me to prescribe a vitamin, I tell them to take several fruits and make a good juice for the child," says Bricks.

Beware of Noisy Toys

"Noisy toys harm kids' hearing," states the *Toronto Star* newspaper. After evaluating "40 toys aimed at children under the age of three," a team of Canadian hearing experts found that "at least 25 were noisy enough to damage young ears," says the paper. A toy cell phone registered the highest level of sound at 115 decibels. According to audiologist Richard Larocque, that sound level is "lower than a jet plane but noisier than most discotheques." The current standard allowed

by Health Canada is 100 decibels.

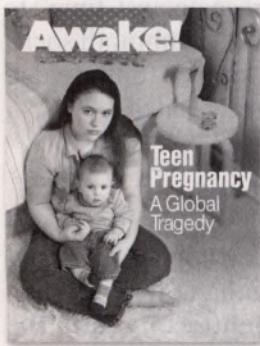
The study suggests that "a standard of 87 decibels for 30 minutes of exposure would better protect hearing," the article stated.



From Our Readers

Teen Pregnancy The series “Teen Pregnancy—A Global Tragedy” touched my heart. (October 8, 2004) I was 16 when I became pregnant. I appreciate that you highlighted the importance of being supportive of the mother and that Jehovah cares for the baby, who hasn’t done anything wrong. Thank you for such a loving article.

M. R., United States



I presented this issue of *Awake!* to the head midwife at a nearby clinic. She remarked that many 14- and 15-year-old girls are giving birth, something formerly unknown here. She said she could use 20 copies of the magazine right away to give to adolescents and their parents.

I. R., Benin

I found out that I was pregnant a month before I turned 17. Telling my parents was by far the hardest and most heartbreaking thing I have ever had to do. I hope that youths read this article and take it seriously. I never thought it would happen to me!

D. C., United States

I became a mother at age 17. I was pressured into a marriage that quickly fell apart. It is painful for me to think that by rushing into a sexual relationship without knowing the consequences, I lost out on much that I could have accomplished during those years. I always try to counsel youths not to make this serious mistake. My most sincere thanks for your article!

N. C., Honduras

“Jehovah, You Found Me!” I am 15 years old, and I thoroughly enjoyed reading the article “Jehovah, You Found Me!” (October 8, 2004) Nelly’s experience helped me to understand more fully the words of James 4:8: “Draw close to God, and he will draw close to you.” Thank you for that faith-strengthening article!

K. P., United States

The experience of Nelly Lenz convinces us that Jehovah is a loving God and that he will make it possible to find him if we keep seeking him.

M. K., Japan

It is comforting to be assured through articles like this that all of Jehovah’s sheep are so precious to him that wherever they are, he remembers and will sustain each one of them.

J. G., Canada

This article brought tears to my eyes. My parents are not Jehovah’s Witnesses, and they gave me a hard time. I am happy that Nelly remained steadfast in her determination to serve Jehovah.

K. L., Jamaica

I am 12 years old. It is very encouraging to know that no matter how many problems you have at home, Jehovah always helps you through them.

J. W., United States

It is good that Nelly shared her experience with us. It will help children in similar situations. And it is important for adults to remember these children. It is easy to forget that they have special needs in the congregation.

M. K., Denmark

I have never been so touched by an experience. I also know what it means to stand up for the truth on your own as a youth. For four years I was the only one in my home who served Jehovah. To read of Jehovah’s personal care for Nelly deeply touched my heart. Thank you for the upbuilding experience. Thank you, Nelly!

G. W., Germany

Warned by Reading Awake!

REGULAR Awake! readers appreciate the value of its articles. But for a German couple vacationing in Khao Lak, Thailand, last December, the article entitled "Killer Waves—Myths and Realities," in the issue of February 8, 2001, proved to be of outstanding value.

The German newspaper *Frankenpost (Selber Tagblatt)* reported the couple's experience: "We had been swimming," recalls Roswitha Gesell. After swimming in the sea, the Gesells went to their hotel to get changed. Reiner Gesell describes the eerie scene that greeted them after that: 'When we got back to the beach ten minutes later, the sea had disappeared.' As far as the reef, which was about seven kilometers [four miles] from the coast, the only thing that could be seen was the sea-floor. 'All the swimmers who had still been in the water had been carried out to sea.' The Gesells owe their survival to an article in the *Awake!* magazine." The article explained that tsunamis are often preceded by unusual outgoing tides.

"When the Gesells saw the giant wave in the distance, they turned around and started running. Reiner Gesell remembers that the wall of water seemed to be some 12 to 15 meters [40 to 50 feet] high. One of his worst memories was of the other tourists on the beach just gaping at the sea. 'They simply stayed put. I shouted that they should run to safety, but no one reacted.' Hardly any of them survived."

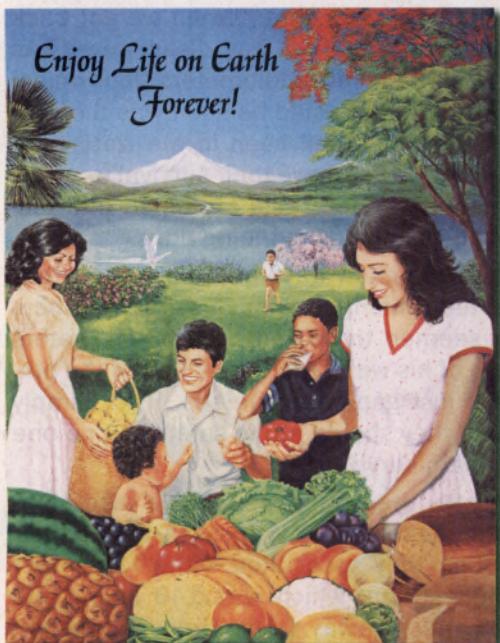
Speaking of the Gesells, the newspaper article also commented: "As Jehovah's Witnesses, during their vacation they associated with the nearest congregation, which was 140 kilometers [85 miles] away from Khao Lak. When their fellow believers heard about the catastrophe, the entire congregation headed for Khao Lak to look for them."

Now safely back in Germany, how grateful this couple are for the valuable information contained in *Awake!* And how grateful they are to the Thai people who helped them, particularly their spiritual brothers, who demonstrated genuine Christian love!





What is God's purpose for us?



■ Is it simply to live a short time on earth—perhaps 70 or 80 years—and then die? Is it God's purpose to take good people to live in heaven? Why did God create the earth? Was it meant to be only a temporary home for people?

The 32-page brochure *Enjoy Life on Earth Forever!* shows that God made the earth to be a lasting home for humans. Our earth was made so that with proper care it would be a beautiful paradise. The brochure's sections "Why Does Man Die?" and "What Is Death?" show what went wrong, and "Jehovah Gives Us a Savior" and "How We Are Saved From Sin and Death" reveal how earth will become a wonderful paradise home for humankind.

The brochure has over 75 pictures, and one or more Bible texts are listed with each picture. These texts provide a basis for discussion of the pictures. If you have children, you can use the pictures to help them learn about God's purposes.