

Awake!

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Can We Grow ENOUGH FOOD?

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CAN WE GROW ENOUGH FOOD?

3-11

Without food crops mankind would starve. Science has done much to enhance this vital resource. But has it done more harm than good?

COVER: Woman in field: Godo-Foto; page 2 background: U.S. Department of Agriculture



How Can I Stop Worrying So Much? **12**

Anxiety can really take the joy out of life. How can you fight this stressful emotion?



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Read about the intrepid Europeans who set foot on the North American continent 500 years before Columbus set sail.

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Is Man Destroying His Own Food Supply?

"Our true challenge today [is] not debts and deficits or global competition but the need to find a way to live rich, fulfilling lives without destroying the planet's biosphere, which supports all life. Humanity has never before faced such a threat: the collapse of the very elements that keep us alive."—Geneticist David Suzuki.

AN APPLE is an easy thing to take for granted. If you live where apples grow in abundance, you might assume that they are readily available and, better yet, that you may pick from a wide variety. But did you know that there may be far fewer types to choose from today than there were 100 years ago?

Between the years 1804 and 1905, there were 7,098 varieties of apples grown in the United States. Today 6,121 of those—86 percent—are extinct. Pears have fared similarly. About 88 percent of the 2,683 varieties once grown are now extinct. And when it comes to vegetables, the numbers are even grimmer. Something is disappearing, and it is called biodiversity—not only the rich variety of species of living things but also the rich variety of types found within species. Diversity within the various kinds of vegetables grown in the United States has been slashed by 97 percent in less than 80 years! But does diversity really matter?

Many scientists say that it does. Although the role of biodiversity is still debated, a number of environmental experts say that it is essential to life on earth. They say that it is just as vital to the plants we grow for food as it is to those growing wild in the forests, jungles, and grasslands

of the world. Diversity *within* a species matters too. The numerous strains of rice, for instance, increase the probability that some strains will have the means to resist common plagues. Hence, a paper published by the Worldwatch Institute noted recently that one thing above all may show mankind how serious it can be to cut down the earth's biodiversity—the effect on our food supply.

The extinction of plants can affect food crops in at least two ways: first, by wiping out the wild relatives of cultivated crops, a potential source of genes for future breeding, and second, by reducing the number of strains *within* cultivated species. Early in the 20th century, for example, probably over 100,000 folk varieties of rice were cultivated in Asia, with at least 30,000 in India alone. Now 75 percent of India's crop consists of just ten varieties. Sri Lanka's 2,000 rice strains have been all but replaced by 5. Mexico, the cradle of corn domestication, cultivates just 20 percent of the varieties that were found there in the 1930's.

But more than just food is at stake. About 25 percent of commercially manufactured medicines are derived from plants, and new medicinal plants continue to be found. Yet, plants are constantly

being driven to extinction. Could we be, in effect, sawing off the very branch that supports us?

According to the World Conservation Union, of some 18,000 species of plants and animals investigated, more than 11,000 face extinction. In places such as Indonesia, Malaysia, and Latin America, where great swaths of forest have been cleared for plantations, researchers can only guess at how many species are about to—or already have—become extinct. Nevertheless, some say that extinction is proceeding “catastrophically fast,” reports *The UNESCO Courier*.

Of course, the earth still produces a prodigious amount of food. But for how long can a burgeoning human population feed itself if the planet’s biodiversity dwindles? Various countries have responded to such concerns by setting up seed banks as insurance against the loss of important plants. Some botanical gardens have taken up the mission of species preservation. Science has supplied the powerful new tools of genetic engineering. But can seed banks and science really solve the problem? The following article will examine this question.

Variety—Essential to Life

IN THE 1840's, Ireland's population exceeded eight million, making it the most densely populated country in Europe. Potatoes were its dietary mainstay, and a single variety called lumpers was the most widely grown.

In 1845 the farmers planted their lumpers as usual, but blight struck and wiped out almost the entire crop. “Most of Ireland survived that difficult year,” wrote Paul Raeburn in his book *The Last Harvest—The Genetic Gamble That Threatens to Destroy American Agriculture*. “The devastation came

the next year. Farmers had no choice but to plant the same potatoes again. They had no other varieties. The blight struck again, this time with overwhelming force. The suffering was indescribable.” Historians estimate that up to 1 million people died of starvation, while another 1.5 million emigrated, most to the United States. Those remaining suffered from crushing poverty.

In the Andes of South America, farmers grew many varieties of potatoes, and only a few were affected by blight. Hence, there was no epidemic. Clearly, diversity of spe-

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cies and diversity within species provide protection. The growing of just one uniform crop runs counter to this basic survival strategy and leaves plants exposed to disease or pests, which can decimate an entire region's harvest. That is why many farmers depend so heavily on the frequent use of pesticides, herbicides, and fungicides, even though such chemicals are often environmentally hazardous.

So why do farmers replace their many folk varieties with one uniform crop? Usually in response to economic pressures. Planting uniform crops promises ease of harvesting, attractiveness of the product, resistance to spoilage, and high productivity. These trends began in earnest in the 1960's with what came to be called the green revolution.

The Green Revolution

Through massive government and corporate campaigns, farmers in famine-prone lands were persuaded to replace their diverse crops with uniform, high-yield grains, particularly rice and wheat. These "miracle" grains were hailed as the solution to world hunger. But they were not cheap—seeds cost up to three times the normal price. Yields also depended heavily on chemicals, including fertilizers, not to mention such costly equipment as tractors. Still, with government subsidies the green revolution took off. "While it has saved millions from starvation," says Raeburn, "[it] is now threatening the world's food security."

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In effect, the green revolution may have provided short-term gains at the cost of long-term risks. Uniformity of crops soon became commonplace across entire continents—while the intensive use of fertilizers encouraged weed growth, and pesticides destroyed beneficial insects as well as pests. In rice paddies, toxic chemicals killed fish, shrimps, crabs, frogs, and edible herbs and wild plants—most being valuable supplementary foods. Chemical exposure also led to cases of poisoning among farmers.

A teacher in the Biology Department of the Open University in the United Kingdom, Dr. Mae-Wan Ho, wrote: "It is now indisputable that monoculture crops introduced since the 'Green Revolution' have adversely affected biodiversity and food security all over the world." According to the UN Food and Agriculture Organization, 75 percent of the genetic diversity present in cultivated plants a century ago is now lost, mainly because of industrial farming practices.

A paper published by the Worldwatch Institute warns that "the ecological risks we take in adopting genetic uniformity are enormous." How are these risks kept at bay? Agricultural scientists and potent chemicals are required as well as financing for farmers. Yet, there are no guarantees. Genetic uniformity contributed to a devastating corn blight in the United States and the loss of half a million acres of rice in Indonesia. In recent years, however, a new farming revolution has

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begun, one that involves the manipulation of life at a more fundamental level—the gene.

The Gene Revolution

The study of genetics has given rise to a lucrative new industry called biotechnology. As the name suggests, it blends biology and modern technology through such techniques as genetic engineering. Some of the new biotech companies, as they are called, specialize in agriculture and are working feverishly to patent seeds that give a high yield, that resist disease, drought, and frost, and that reduce the need for hazardous chemicals. If such goals could be achieved, it would be most beneficial. But some have raised concerns about genetically engineered crops.

"In nature, genetic diversity is created within certain limits," says the book *Genetic Engineering, Food, and Our Environment*. "A rose can be crossed with a different kind of rose, but a rose will never cross with a potato. . . . Genetic engineering, on the other hand, usually involves taking genes from one species and inserting them into another in an attempt to transfer a desired trait or character. This could mean, for example, selecting a gene which leads to the production of a chemical with antifreeze properties from an arctic fish (such as the flounder), and splicing it into a potato or strawberry to make it frost-resistant. It is now possible for plants to be engineered with genes taken from bacteria, viruses, insects, animals or even humans."* In essence, then, biotechnology allows humans to breach the genetic walls that separate species.

Like the green revolution, what some call the gene revolution contributes to the problem of genetic uniformity—some say even

* Theories about the possible effects of genetically modified foods on animal and human health and the environment remain controversial. The genetic mixing of totally unrelated organisms has led some to raise ethical questions.—See *Awake!*, April 22, 2000, pages 25-7.

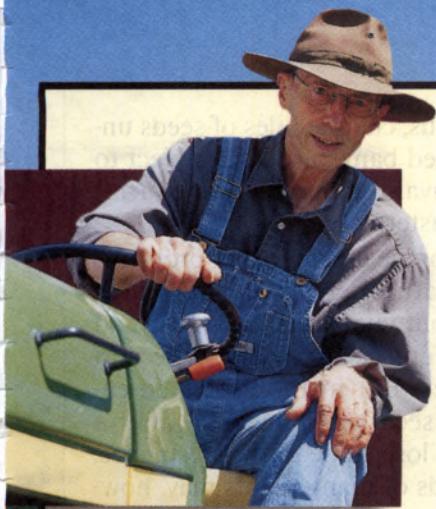
more so because geneticists can employ techniques such as cloning and tissue culture, processes that produce *perfectly identical* copies, or clones. Concerns about the erosion of biodiversity, therefore, remain. Genetically altered plants, however, raise new issues, such as the effects that they may have on us and the environment. "We are flying blindly into a new era of agricultural biotechnology with high hopes, few constraints, and little idea of the potential outcomes," said science writer Jeremy Rifkin.*

On the other hand, the power to manipulate life on the genetic level is a potential gold mine, and so the race is on to patent new seeds and other engineered organisms. In the meantime, plant extinction continues unabated. As mentioned earlier, in order to avert disaster, some governments and private institutions have set up seed banks. Will these banks enable future generations to have a broad variety of seeds to plant and harvest?

Seed Banks—Insurance Against Extinction?

The Royal Botanic Gardens at Kew, England, has embarked on what it hails as "one of the largest international conservation projects ever undertaken"—the Millennium Seed Bank Project. The principal aims of the project are (1) to collect and conserve 10 percent—over 24,000 species—of the world's seed-bearing flora by 2010 and (2) well before then, to collect and conserve seeds of the entire United Kingdom native seed-bearing flora. Other countries have also established seed banks, or gene banks, as they are sometimes called.

* New Scientist magazine reports that European sugar beets "genetically modified to resist one herbicide have accidentally acquired the genes to resist another." The errant gene crept into the beets when they were accidentally pollinated by another beet variety engineered to resist a different herbicide. Some scientists fear that the widespread use of herbicide-resistant crops could lead to the creation of superweeds immune to herbicides.



THE FARMER

An 'Endangered Species'?

"Since 1950, the number of people employed in agriculture has plummeted in all industrial nations, in some regions by more than 80 percent," says the journal *World Watch*. The United States, for example, now has fewer farmers than prisoners. What is causing this exodus from the land?

Major factors are falling income, rising rural debt, growing poverty, and increasing mechanization. In 1910, farmers in the United States received about 40 cents for every dollar that

shoppers spent on food, but by 1997, the farmers' share had dwindled to about 7 cents. A wheat farmer, says *World Watch*, "gets just 6 cents of the dollar spent on a loaf of bread." This means that customers pay about as much for the wrapper as they pay the farmer for his wheat. In developing nations, farmers are even worse off. A farmer in Australia or Europe may be able to borrow from a bank to tide him over a bad year; a West African farmer may not be able to try again. He might not even survive.



Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT)

"Monoculture crops introduced since the 'Green Revolution' have adversely affected biodiversity and food security all over the world."—Dr. Mae-Wan Ho

Biologist John Tuxill states that at least 90 percent of the millions of seeds stored in seed banks are of valuable food and commodity plants, such as wheat, rice, corn, sorghum, potatoes, onions, garlic, sugar-cane, cotton, soybeans, and other beans, to name a few. But seeds are living organisms that remain viable only as long as their internal energy reserves last. So how dependable are seed banks?

Woes at the Bank

Seed banks cost money to run—annually a total of about \$300 million, according to Tuxill. However, even this amount may be inadequate, he notes, for “only 13 percent of gene-banked seeds are in well-run facilities with long-term storage capability.” Because poorly stored seeds do not last long, they must be planted early so that the next generation of seeds can be harvested; otherwise, seed banks become seed morgues. Of course, such work is labor-intensive, which only complicates matters for facilities that are already hard-pressed for funds.

The book *Seeds of Change—The Living Treasure* explains that the National Seed Storage Laboratory, in Colorado, U.S.A., has “suffered multiple difficulties, including power failures, broken refrigeration equipment, and understaffing that

has left enormous, chaotic piles of seeds uncatalogued.” Seed banks are also subject to political upheavals, economic downturns, and natural disasters.

Long-term storage creates other problems too. In their natural environment, plants have a limited but vital ability to adapt, and this enables them to survive disease and other challenges. But in the protected environment of a seed bank, they may after a few generations lose some of that resilience. Well-stored seeds of many plants may, however, last for centuries before they need replanting. Despite such limitations and uncertainties, the very existence of seed banks reflects the growing concerns about the future of mankind’s food crops.

Of course, the best way to reduce extinction is to protect native habitats and revitalize diversity in crops. But to do that, says Tuxill, we need to “develop a new balance between human needs and those of the natural world.” How realistic, though, is it to think that humans will “develop a new balance” with the natural world while they pursue industrial and economic progress with almost a religious zeal? Even agriculture, as we have seen, is being assimilated into the high-tech, market-driven world of big business. There must be another answer.



◀ © Trustees of Royal Botanic Gardens, Kew ▼



The Millennium Seed Bank, in England, is preserving valuable plant seeds





Who Will Feed the World?

WILL mankind ever start protecting biodiversity instead of destroying it? That, according to biologist John Tuxill, would require "a major policy shift." He adds, though, that such a shift "is not likely to occur without profound changes in peoples' awareness of plant biodiversity's benefits, their desire to change existing practices, and their willingness to try new approaches."

Many find it hard to believe that such profound changes will come about. And many disagree with Tuxill's conclusion. There are environmental scientists who feel that the role of biodiversity is still poorly understood and perhaps exaggerated by some of their colleagues. Still, as scientists debate the matter, it seems worthwhile to take note of the cry of alarm coming from some experts in this field. They seem troubled, not only by

the loss of biodiversity but also by the greed and shortsightedness they see at work behind such losses. Note these comments from various writers.

"Just a century ago, hundreds of millions of farmers, scattered across the planet, controlled their own seed stocks. . . . Today, much of the seed stock has been brought up, engineered, and patented by global companies and kept in the form of intellectual property. . . . By focusing on short-term market priorities, the biotech industry threatens to destroy the very genetic heirlooms that might one day be worth their weight in gold as a new line of defense against a new resistant disease or super bug."—Science writer Jeremy Rifkin.

"The media mantra, repeated over and over, is that the real bottom line must be the marketplace, free trade and the global

economy. When the media are dominated by wealth and large corporate interests, this economic faith is like religious dogma and is seldom challenged."—Geneticist David Suzuki.

In his book *Seeds of Change—The Living Treasure*, author Kenny Ausubel points out the hypocrisy in developed countries when their "governments and corporations bemoan the imminent global danger of extinc-

tion of humanity's 'common heritage' of the gene pool." He notes that they too are threatening biodiversity by promoting the use of modern farming techniques and monocultures.

Whether the worst fears of environmentalists are justified or not, you may find it difficult to feel confident about the future of this planet. How long can it survive when

Under God's Kingdom, food will be safe and plentiful



mankind seems driven by greed? Desperate for answers, many people hope that science will come to our rescue.

Can Science and Technology Save Us?

The Royal Society of Edinburgh recently expressed concern that scientific advances are now so rapid and sophisticated that scientists run the risk of not fully understanding the implications of these advances. "Science provides tiny, fragmented insights into the natural world," wrote David Suzuki. "We know next to nothing about the biological makeup of Earth's life-forms, let alone how they are interconnected and interdependent."

As *Science* magazine explained, "neither the risks nor the benefits of GEOS [Genetically Engineered Organisms] are certain or universal. . . . Our capacity to predict ecological impacts of introduced species, including GEOS, is imprecise."

Many "advances" have truly been a double-edged sword. They do some good, but they also demonstrate mankind's lack of wisdom and, all too often, their greed. (Jeremiah 10:23) For instance, while the green revolution produced an abundance and fed many mouths, it also contributed to the loss of biodiversity. By promoting the use of pesticides and other expensive farming techniques, the green revolution ultimately benefited "corporate plant breeders and the elite of the Third World at the expense of ordinary people," wrote Dr. Mae-Wan Ho. This trend is continuing as agriculture based on biotechnology becomes an even bigger and more powerful enterprise and takes us into a future where food security becomes increasingly dependent on science.

These concerns, however, need not fill us with gloom. Really, they just serve to illustrate a larger point. The Bible helps us to see that we should not expect too much from the imperfect humans currently managing

this planet and its resources. For now, failures and mismanagement are simply part of the human condition. Hence, Psalm 146:3 advises: "Do not put your trust in nobles, nor in the son of earthling man, to whom no salvation belongs." But we can put our complete trust in God. (Proverbs 3:5, 6) He has both the desire *and* the power to help us.—Isaiah 40:25, 26.

Soon—A Vibrant, Thriving Earth

Before renovating a dilapidated house, you may first need to clear out the rubbish. Similarly, Jehovah God will soon rid the earth of all the wicked, including those who see our planet, its natural assets, and even fellow humans as merely things to exploit in the interests of personal and corporate wealth. (Psalm 37:10, 11; Revelation 11:18) But Jehovah will preserve alive all who love him and strive to do his will.—1 John 2:15-17.

Thereafter, the earth and its countless living things, including obedient humans, will be administered by a government of God's making—the Messianic Kingdom. (Daniel 7:13, 14; Matthew 6:10) And what abundance the earth will produce under that wise rulership! Says Psalm 72:16: "There will come to be plenty of grain on the earth; on the top of the mountains there will be an overflow." Yes, food will no longer be a cause of controversy and anxiety. Instead, it will be safe and plentiful.

So as the present system goes ever deeper into its dark tunnel of despair and uncertainty, those who trust in Jehovah can look forward to a glorious future right here on earth. This hope is contained in the "good news of the kingdom," which Jehovah's Witnesses joyfully share with all who want a better and more just world. (Matthew 24:14) Thanks to this sure hope—and God's fatherly care of his people—we can, even now, "reside in security and be undisturbed from dread of calamity."—Proverbs 1:33.

YOUNG PEOPLE ASK . . .

"One of the most stressful things for a young person can be the future. You worry about yourself. Should I leave home? Go to school? Take up the full-time ministry? Get married? You have so many options that it's scary."
—Shane, 20 years old.

DO YOU worry a lot? Many youths do, and for a variety of reasons. A newsletter published to offer guidance to parents reported: "A recent worldwide survey of teenagers ages 15 to 18 in 41 countries revealed that getting a good job is the top concern among today's teens." Next in line was worry over their parents' health. Fear of losing someone they loved was also high on the list.

A U.S. Department of Education survey found that "the pressure to get good grades" was a major concern of many youths in the United States. The same survey revealed that more than a few young people feel the way Shane did (quoted at the outset). Another youth, named Ashley, says: "I'm worrying about my future."

Yet other youths worry about their physical safety. According to a 1996 survey, almost 50 percent of youths in the United States felt that their school was getting more violent. Over eight million teens (37 percent) reported that they knew someone who had been shot!

Not all worries are quite so grim, though. For many youths their biggest worries involve their social life. Says an on-line magazine di-



How Can I Stop Worrying So Much?

rected to parents: "Teens do worry about having a boyfriend or girlfriend, but more often they worry about having no friends at all." A teenage girl named Meagan laments: "How do you look and act cool? I need some friends." Along the same lines, a 15-year-old Christian youth named Natanael observes: "The kids at school worry about style. They worry about how they walk, talk, and look to others. They're afraid of looking stupid."

Problems—A Part of Life

It would be nice if we could lead worry-free lives. However, the Bible says: "Man, born of woman, is short-lived and glutted with agitation." (Job 14:1) Problems—and the worries that accompany them—are therefore a part of life. But if you let worries and anxieties dominate your thinking, you can do a lot of damage to yourself. The Bible warns: "Anxious care in the heart of a man is what will cause it to bow down."—Proverbs 12:25.

One way to avoid unnecessary worry is to control your own behavior. Sixteen-year-old Ana says: "Many of my classmates are worried about becoming pregnant or getting a sexually transmitted disease." But you can avoid such worries by holding to the Bible's moral standards. (Galatians 6:7) Even so, not all your problems may be so clear-cut or easily resolved. How can you stop worrying so much?

"Worry Wisely"

Many people allow worry to immobilize them. But an article appearing in a magazine for teenagers suggested that one can "worry wisely" by turning worry into constructive action! The Bible has many principles to help you do that. Consider Proverbs 21:5: "The plans of the diligent one surely make for advantage." Say, for example, that you want to have a gathering of some friends in the congregation. Good planning can spare you much worry. Ask yourself, 'Exactly who will be invited? When do I want them to arrive? When do I want them to leave? How much do I really need in the way of refreshments? What are some fun activities that everyone will enjoy?' The more you think things out, the more likely it is that your gathering will go well.

However, you can generate worry by allowing things to become too complicated. Jesus Christ gave this advice to a woman who went to more trouble than was necessary in providing for her guest: "A few things, though, are needed, or just one." (Luke 10:42) So ask yourself, 'What really is important to make this gathering successful?' Keeping things simple may help you to minimize your anxiety.

Another source of worry might be your safety in school. There may be little that you can do to change the situation there. But you can take practical steps to protect yourself. "Shrewd is the one that has seen

the calamity and proceeds to conceal himself," says Proverbs 22:3. Simply avoiding dangerous places—not only the isolated spots but also unsupervised areas where the unruly tend to gather—can lower your chances of running into trouble.

Schoolwork can be another source of worry. Maybe you have several important homework assignments and you're worried that you won't get all of them done in time. The principle at Philippians 1:10 is helpful: "Make sure of the more important things." Yes, learn to prioritize! Figure out which assignment is the most time sensitive, and do that one first. Then, move on to the next one. Gradually you will begin to feel in control of the situation.

Get Advice

When Aaron was a youth, he worried so much about passing final exams that he had chest pains. He recalls: "I spoke to my parents, and they sent me to the doctor. He immediately saw that there was nothing wrong with my heart and explained how anxiety can affect the body. Later my parents helped me realize that I had done all I could do in preparing for the tests and that now I needed to worry more about taking care of myself. My anxiety lifted, the chest pains went away, and I did well on my exams."

Talk over your worries with your parents





If you feel weighed down by worry, don't suffer in silence. Proverbs 12:25, partially quoted earlier, says in its entirety: "Anxious care in the heart of a man is what will cause it to bow down, but the good word is what makes it rejoice." Only if you talk about your "anxious care" can you get a "good word" of encouragement!

First, you might want to talk things over with your parents; they may very well come up with some suggestions. The spiritually mature ones in your local Christian congregation are another source of support. Fifteen-year-old Janelle relates: "I was worried about going to high school, scared of facing everything—drugs, sex, violence—until I spoke to a congregation elder. He gave me many practical suggestions. I immediately felt better because now I realized that I could handle the situation."

Don't Put Things Off

At times there is something we need to do, but we put it off because we find it unpleasant. Nineteen-year-old Shevone, for example, had a personal difference with a fellow Christian. She knew that she needed to talk things out, but she procrastinated. "The more I put it off, the more it bothered me," she confesses. Then Shevone remembered Jesus' words at Matthew 5:23, 24, which urge Christians to settle such problems immediately. "When I finally did so," Shevone recalls, "I got relief."

Are you putting something off—an unpleasant assignment or an uncomfortable confrontation? Well, take care of it soon, and you'll have one less thing to worry about.

Serious Situations

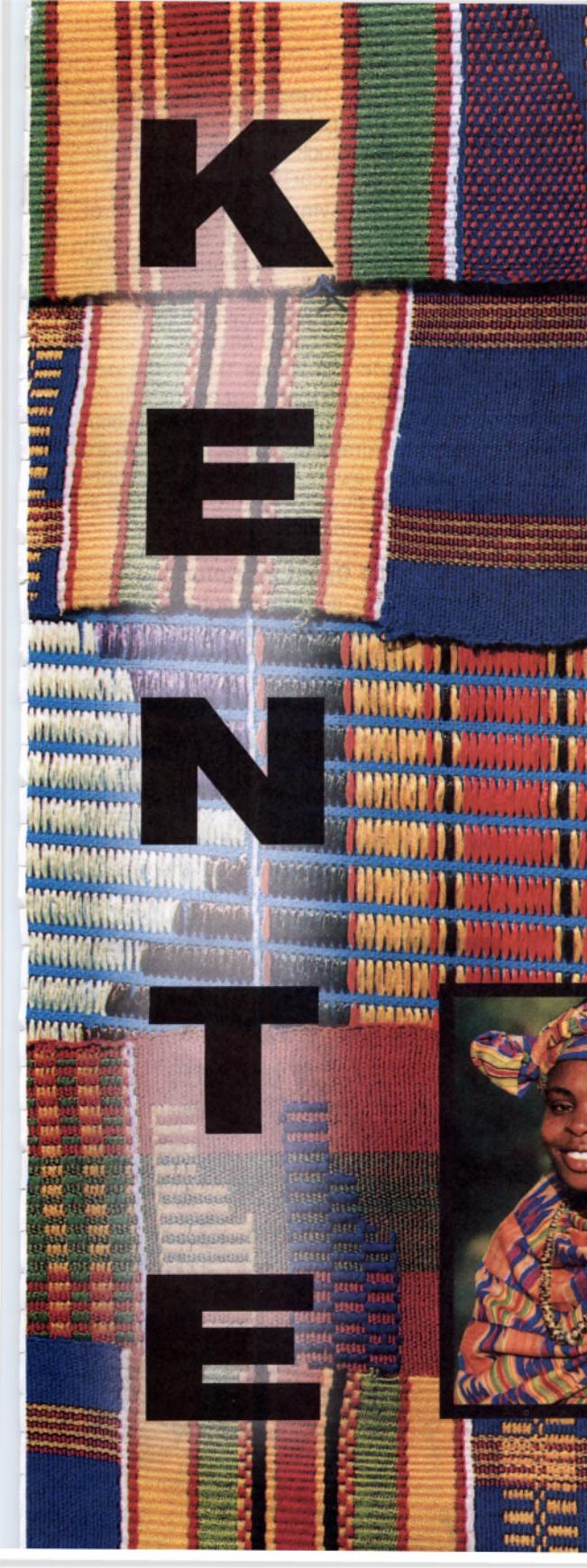
Not all situations are resolved so easily. Consider a young man named Abdur.

His mother has cancer, and he has to support both her and his younger brother. Naturally, Abdur worries about his mother's condition. But he says: "I take a cue from Jesus' words, 'Who of you by being anxious can add one cubit to his life span?' Instead of becoming frazzled, I try to think out the situation and determine what will bring the best results."—Matthew 6:27.

Remaining calm in a crisis is not easy. Some become so distressed that they neglect themselves, refusing to eat. However, the book *Helping Your Teenager Deal With Stress* warns that when you deprive yourself of basic nourishment, you are "even less capable of withstanding the ravages of stress and even more susceptible to major health breakdowns." So take care of yourself physically. Get sufficient rest and nourishment.

You can find the greatest relief by following the Bible's advice: "Throw your burden upon Jehovah himself, and he himself will sustain you. Never will he allow the righteous one to totter." (Psalm 55:22) Shane, quoted at the outset, was anxious about his future. "I began to focus more on God's Word and his purpose," he recalls. Soon he realized that his future would be happy if he used his life to serve God. (Revelation 4:11) "I stopped worrying about myself," says Shane. "I had something bigger to think about."

So when you find yourself worrying too much, seek constructive ways to deal with your problem. Get mature advice. And above all, take your concerns to Jehovah "because he cares for you." (1 Peter 5:7) With his help, maybe you will stop worrying so much.



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THE CLOTH OF KINGS

BY AWAKE! WRITER IN GHANA

In a flurry of speed, the weaver's hands glide back and forth across the face of the cloth. Moving to the rhythm of squeaking pulleys and creaking levers, the craftsman concentrates on the colorful strip of cloth that lies before him. He holds ropes between his toes; these ropes work the heddles—Harnesses that move up and down separating and guiding the vertical warp threads that stretch out 20 feet in front of the loom.* Nimblly his fingers weave single strands of colorful silk horizontally into the separated warp threads, creating a weft pattern that is then beaten tightly into the finished fabric.

The piece of cloth that emerges is a mere four inches wide. But it radiates with brilliant color and intricate patterns. The craftsman smiles with satisfaction as he examines his masterpiece—genuine kente cloth.

An Ancient Craft

For thousands of years, skilled artisans have employed the ancient craft of weaving. Threads spun from flax, cotton, and silk have always provided a ready source of weaving materials. Basic colors were extracted from roots and plant leaves, giving weavers the ability to create simple designs and patterns in their work.

Weavers among the nomadic peoples of Africa devised looms that were small and easily transported from place to place. Known as strip looms, they produced a

* Warp—the series of yarns extending lengthwise into the loom. Weft—the series of yarns running crosswise to the warp yarns.





Strip looms are light and portable

narrow strip of cloth only three to five inches in width. These long, narrow lengths of fabric were then sewn together, edge to edge, to create a larger cloth that could be wrapped around the body as a garment. Portable strip looms were carried on the backs of pack animals across deserts, through rivers, and over high mountain ranges. Transported along ancient trade routes, the strip loom had a profound influence on the peoples it touched.

The Desire for Cloth

For many centuries West African kings and chiefs controlled the mineral-rich land that the European explorers called the Gold Coast.* Here large amounts of gold were mined, bringing wealth to the ruling Ashanti kings and their royal households. Adorned with heavy gold jewelry and wrapped in specially woven cloth, these kings and their prominent chiefs made a display of their wealth, power, and authority before their subjects. The unique cloth these rulers wore came to be called kente, a word that may have alluded to the cloth's similarity to the weave of a basket. Other Gold Coast tribes also practiced strip weaving, but for the Ashanti kings, kente cloth came to represent prestige and royal status.

Gold Coast strip weavers used locally spun cotton. Only yarn dyed blue was avail-

able. These blue threads were woven into the dull white of the cotton cloth to produce lines and blocks in simple geometric patterns for the local people.

The finer weaving of the king's royal kente cloth was restricted. Skilled royal weaving groups were established to create and produce high-quality material. The weaving technique was a jealously guarded and well-kept secret. All other weavers were forbidden to weave the textile patterns and designs that were exclusively for the king and his royal court. The king accumulated hundreds of cloths, each with its own unique design and pattern. Traditionally, he would never wear the same cloth in public more than once.

The Quest for Color

In the 16th century, another type of cloth began to appear on the Gold Coast. This new cloth was not woven on African strip looms but produced in distant lands and brought by the first European sailors searching for ivory, gold, and slaves. The imported cloth contained threads of bright, eye-catching colors. Soon, this imported cloth, woven richly with red, yellow, and green threads, became a valued trading commodity. Few had the wealth to obtain such expensive cloth from the



* Present-day Ghana.

European traders. Only the rich Ashanti, who controlled the flow of gold, ivory, and slaves to the sailing ships waiting at the coast, had the means to obtain it. But the woven cloth was not what the Ashanti king and his chiefs desired.

Once cloth was obtained, weavers painstakingly unraveled and removed the coveted colored threads, discarding the cloth that remained. These precious threads were then rewoven on the strip looms of the royal weavers. As the color range of materials increased, so initiative and innovation blossomed, prompting the craftsmen to express their creative and technical skills in cloth as never before. Skilled weavers from other tribes were employed by the Ashanti kings, resulting in the production of kente cloth of unmatched quality.

Geometric patterns that resembled fish, birds, fruits, leaves, sunsets, rainbows, and other spectacles of nature formed a



textile art that was minutely detailed and contained symbolic meaning. Cloth interwoven with golden threads represented wealth, the color green conveyed the idea of freshness and newness, black symbolized sadness, red showed anger, and silver pictured purity and joy.

Weavers worked patiently and without haste for many months on a single cloth, knowing that their finished work would be judged as a measurement of their skill and creative genius. Demand was low for such exquisite workmanship, as few could afford to purchase rare and expensive kente cloth.

Modern Kente

With the passing of time, the influence of kings and powerful chiefs began to wane. No longer was there a need to separate royalty from commoner by a cloth. Demand for this beautiful fabric increased, as it began to be used for nonroyal purposes. Woven quickly to meet a greater demand, kente cloth began to decline in quality, workmanship, and price.

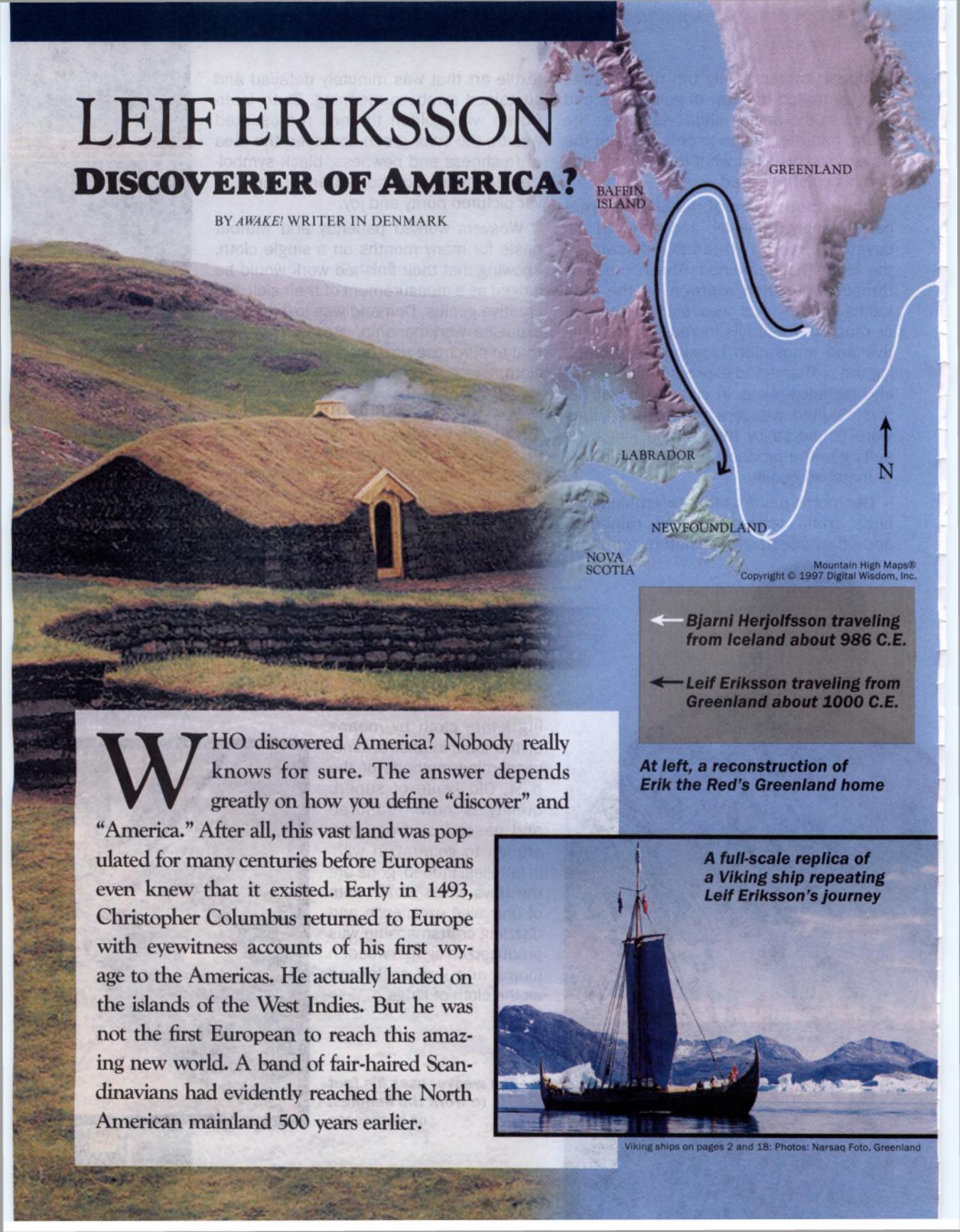
Today the majority of kente weaving is done with synthetic thread and is then used in the mass production of bags, ties, belts, hats, and clothing. Few weavers are interested in producing kente cloth by means of the labor-intensive, time-consuming methods of the past. Old kente of superb quality is now treasured and passed on from generation to generation within families. Indeed, gone are the days when kente cloth of unrivaled excellence and dazzling craftsmanship was produced on simple wooden looms and was acclaimed as the cloth of kings.

The weaver uses his feet to work the heddles, or harnesses



LEIF ERIKSSON DISCOVERER OF AMERICA?

BY AWAKE! WRITER IN DENMARK



WHO discovered America? Nobody really knows for sure. The answer depends greatly on how you define "discover" and "America." After all, this vast land was populated for many centuries before Europeans even knew that it existed. Early in 1493, Christopher Columbus returned to Europe with eyewitness accounts of his first voyage to the Americas. He actually landed on the islands of the West Indies. But he was not the first European to reach this amazing new world. A band of fair-haired Scandinavians had evidently reached the North American mainland 500 years earlier.

At left, a reconstruction of Erik the Red's Greenland home

← Leif Eriksson traveling from Greenland about 1000 C.E.

**A full-scale replica of
a Viking ship repeating
Leif Eriksson's journey**



Viking ships on pages 2 and 18: Photos: Narsaq Foto, Greenland

A thousand years ago, the North Atlantic was likely as cold and unpredictable as it is today. A sailor may think that he knows the ocean's changing winds and currents, but fog and storm can make it impossible for him to find his bearings for weeks on end. According to one of the ancient Norse sagas, this is just what happened one summer to young Bjarni Herjolfsson, an accomplished sailor and adventurer. He lost his bearings—but he might have found a continent!

It was the era of the Vikings, when the Norse expanded their dominion across the seas and down through Europe. Their slim, seaworthy ships could be seen anywhere from the coast of Norway to the shores of North Africa to the rivers of Europe.

According to the *Saga of the Greenlanders*, Bjarni went on a long excursion to Norway. As the winter of 986 C.E. neared, he returned to Iceland with a full cargo. But to his surprise, he found that his father had left Iceland with a fleet of ships under the leadership of Erik the Red. They had gone away to settle in a large country that Erik had discovered west of Iceland. To add to its appeal, Erik had named the island Greenland. Resolutely, young Bjarni set sail for Greenland. But then the wind changed. Fog descended upon the sailors. "For many days they did not know where they were sailing," states the saga mentioned above.

When the seamen finally saw land, it did not fit the description of Greenland. The coast appeared to be lush, hilly, and forested. They sailed north with the coast on their left side. A second sighting of land seemed no more like Greenland than the first. Several days later, though, the land was different—more mountainous and glacial. Then Bjarni and his crew turned east toward open seas and finally found Greenland and the Norse colony of Erik the Red.

Leif Eriksson Sets Out

This may be how Europeans first set their eyes—though not their feet—on the mainland of the continent that was later to be known as North America. The report of what Bjarni had seen aroused the keen interest of his fellow Norsemen in Greenland. Their chilly land had few trees; to build and repair their boats and homes, they depended on driftwood or on the costly transport of lumber from overseas. But apparently just across the water to the west was a land with forests full of trees in untold numbers!

Especially tempted by this new land was young Leif Eriksson, a son of Erik the Red. Leif was described as "a large, strong man, of very striking appearance and wise." About the year 1000, Leif Eriksson bought Bjarni's ship, and with a crew of 35 men, he set out to find the coasts Bjarni had seen.

Three New Lands

If the sagas are accurate, Leif first found a grassless land, with large glaciers covering the highlands. Because that land was like a single flat slab of rock, Leif named it Helluland—meaning "Stone-Slab Land." This may have been the moment when Europeans first set foot on North America. Historians today believe that Helluland was Baffin Island, in northeastern Canada.

The Norse discoverers continued their journey south. They encountered a second land, which was flat and forested, with beaches of white sand. Leif called it Markland, meaning "Forest Land," today usually identified with Labrador. Soon they discovered a third and even more promising land.

The saga continues: "They sailed out to sea and spent two days at sea with a north-easterly wind before they saw land." They found this new land so pleasant that they decided to build houses and spend the winter there. During the winter "the temperature never dropped below freezing and the grass only withered very slightly." Later, one of



Artifacts on display at the
Museum of National Antiquities,
Stockholm, Sweden

the men even found grapes and vines; hence, Leif Eriksson called the land Vinland, possibly meaning "Wine-land." The following spring the men sailed back to Greenland, their boats laden with the bounty of Vinland.

Scholars today would love to know just where this Vinland of green pastures and grapes was, but its location remains elusive. Some researchers find that topographical features in Newfoundland match the descriptions in the ancient sagas. A site excavated in Newfoundland shows that Norsemen did visit the island. Yet, other scientists hold that Vinland must have been

farther south and that the site in Newfoundland served the Norsemen as a base camp or a gateway to a more southerly Vinland.*

What Evidence?

No one really knows how to reconcile the details of this Norse saga with today's geography. The sketchy and cryptic details of the sagas have long intrigued historians. However, the most substantial evidence of a Norse presence in America before Columbus is the site excavated during the 1960's and 1970's in Newfoundland, near the vil-

* See the article "Where Is the Legendary Vinland?" in the July 8, 1999, issue of *Awake!*

HOW DID THE VIKINGS NAVIGATE?

The Norse Vikings had no compasses. How, then, did they come to be such excellent sailors? When not sailing in open seas, they sailed with a coast in sight. When possible they crossed a strait at a point where land could be seen on both sides. In addition, they knew how to follow the sun and the stars. For example, they used a simple system to determine their latitude, employing a table of figures for each week of the year and a measuring stick to gauge the height of the midday sun above the horizon. Because they had no system for determining longitude, when they were in open seas they preferred to sail due east or due west, following a chosen latitude.

If, for instance, they wanted to travel from Green-

land to a position on the Vinland coast, they would sail south from Greenland until they found the correct latitude; then they would turn due west and find the desired harbor. Also, bird-watching was useful to a Viking crew in open seas. They were experts in deducing where there was land—and what land it was—by observing birds in flight. They sometimes took ravens with them; when freed, the birds would soar and take flight toward the nearest coast. The Viking crew then knew where to find the nearest land.

Another aid to navigation was the taking of soundings. A Viking sailor would lower a line with a lead weight attached. This served two purposes. First, it enabled him to

determine the water's depth. After the weight struck bottom, the sailor would haul in the line, using the span of his arms to measure its length. To this day, mariners measure depth in terms of the six-foot "fathom," a term derived from an Old Norse word meaning "outstretched arms." But the lead weight had a second function. Often, it was made with a hollow bottom that was filled with tallow. Thus, the weight would bring up a sample of the seafloor. The sailor would examine the composition of the sample and consult his sea charts, which contained written descriptions of the makeup of the seabed in various locations. Simple though their tools were, the Vikings became outstanding navigators.

lage of L'Anse aux Meadows. This site contains the ruins of houses that are indisputably Norse, as well as an iron furnace and other objects that have been dated to the time of Leif Eriksson. Also, a Danish explorer working in southern Newfoundland recently found a carefully crafted stone weight that was probably used in a Viking ship.

The Norse voyages to new lands in the far west were not kept secret. Leif Eriksson traveled to Norway to report what he had seen to the Norwegian king. When Adam of Bremen, a German historian and head of a cathedral school, traveled to Denmark about 1070 to learn of lands to the north, Denmark's King Sweyn told him about Vinland, with the excellent wine. This bit of lore became part of Adam of Bremen's chronicle. Hence, many of the learned in Europe came to know of the western lands that Norsemen had visited. Additionally, ancient Icelandic annals of the 12th and 14th centuries mention some later Norse voyages to Markland and Vinland, west of Greenland.

Christopher Columbus too may well have known about the Vinland journeys that took place some 500 years before his time. According to one book about

Vinland, there are indications that before his

**Statue of
Leif Eriksson,
Iceland**

famous voyage of 1492/93, Columbus even traveled to Iceland in order to study the records there.

What Became of the Norsemen?

There is no record of a permanent Norse settlement in America. There may have been a short-lived, abortive attempt at settling there; but conditions were harsh, and native Americans—whom the Vikings called Skraelings—proved to be more than a match for the intruders. In Greenland the descendants of Erik the Red and of his son Leif Eriksson had a difficult time. The climate grew harsher, and provisions became sparse. After four or five centuries, the Norse seem to have disappeared entirely from Greenland. The last written record of Norsemen in Greenland involves a wedding held in a Greenland church in 1408. Over a century later, a German merchant ship found the Greenland colony entirely deserted but for a single unburied body—that of a man, his knife still at his side. After that, there is silence about the Norsemen in Greenland. Not until the 18th century did Norwegian and Danish settlers arrive to establish a permanent colony.

It was from Greenland, however, that intrepid Norse navigators set out for a new world. One can still imagine those hardy sailors guiding their square-sailed boats across unknown waters until they gazed in wonder at a strange coastline on the horizon—never suspecting that five centuries later, Christopher Columbus would be hailed as the discoverer of this New World.

L'Anse aux Meadows, Newfoundland

Parks Canada

THE AMAZING MUSSEL *Reveals Its Secrets*

WHAT produces a waterproof superglue, acts like a vacuum cleaner, and even teaches scientists about gene repair? The humble little shellfish known as the mussel!

Mussels are found worldwide. Some live in the sea. Others inhabit freshwater streams and lakes. Inside their double-valved shell lies a soft body that is covered with a skinlike organ called a mantle. As is the case with all mollusks, the mantle forms the shell by mixing calcium and carbon dioxide, which are extracted from the creature's food and the surrounding water. To match that ability, we humans would have to eat rock fragments, process them inside us, and then release them as prefabricated building materials that automatically make walls and roofs! But it is not the shell that is exciting researchers; it is the marine mussel's foot.

Mussel Superglue

Try to pry a mussel from a rock, and you will discover what an incredibly firm grip it has—a necessity if the mussel is to resist the sharp beak of a hungry seabird or the pounding waves of the sea. How does it manage to cling so tight? When it chooses a place to set up

Mussels are splendid water purifiers

home, it pokes its tongue-shaped foot out of its shell and presses it against a solid surface. Special glands secrete a fluid mixture of proteins into a groove that runs the length of the foot. This liquid quickly hardens into a fine, elastic thread about an inch long. Then a tiny padlike structure at the end of this thread squirts out a dab of natural adhesive, the mussel lifts its foot, and anchor line number one is complete. These strategically placed threads form a bundle called the byssus, which tethers the mussel to its new home in much the same way that guy ropes hold down a tent. The whole procedure takes only three or four minutes.—See diagram.

Imagine having a very strong glue that is non-toxic and so flexible that it can penetrate the tiniest nooks and crannies, sticking to any surface, even under water. Shipbuilders would welcome it for repairing vessels without the expense of dry-docking them. Autobody workers would like a really waterproof paint that keeps the rust out. Surgeons would value a safe adhesive to join broken bones and to close wounds. Dentists could fill cavities and mend chipped teeth with it. The list of possible uses appears endless.

However, scientists are not thinking of using the mussels themselves to produce this superglue. It would take some 10,000 shellfish to make just one gram of glue. So collecting enough mussels to supply the world's demand for superglue would wipe out the mussel population, many species of which are already endangered. Instead, American researchers have isolated and cloned the genes for five mussel adhesive proteins, and they are about to mass-produce them in the laboratory so that industries can test them. British scientists too are

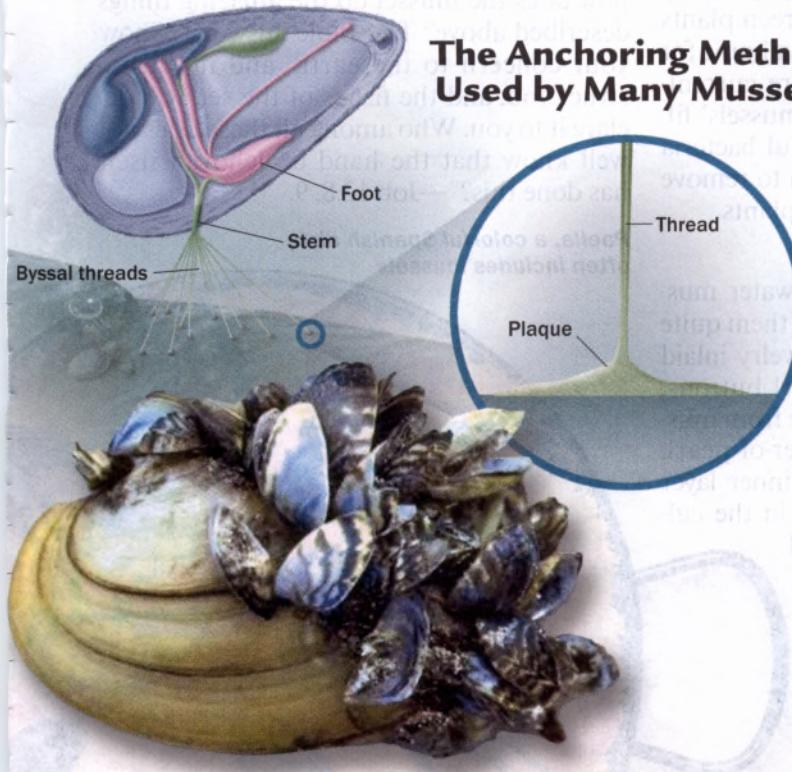


conducting research on one of these adhesive proteins. However, the mussel is still one jump ahead. Only the mussel instinctively knows the exact blend of proteins needed for each kind of surface. Molecular biologist Frank Roberto has asked admiringly: "How are you ever going to mimic that?"

The Vacuum Cleaner

Mussels are filter-feeders. In most species each mussel daily draws several liters of water into its body and strains out not only food and oxygen but also pollutants like harmful bacteria and toxic chemicals. This ability makes mussels splendid water purifiers. It also makes them handy early-warning detectors for water contamination. For example, hundreds of mussels have been put into the sea around the Ekofisk oil field off the coast of Norway. Every few months scientists pry them up and measure the amount of pollution in their shells to see if chemicals discharged into the sea are harming marine life. Since 1986, mussels and oysters have been put to work in the Mussel Watch Project operating in coastal and inland waters around North America. Researchers get a good idea of any changes in water quality by annually checking the shellfish for buildup of chemicals inside them. How useful!

One freshwater species, the striped zebra mussel, is often regarded as a pest. This thumbnail-size native of eastern Europe was likely introduced into North America by accident



Asian green: Courtesy of Mote Marine Laboratory;
zebra: S. van Meelerveld/University of Amsterdam/Michigan Sea Grant;
villosa iris mussel and bottom left: © M. C. Barnhart



Asian green mussel



Blue mussel



Zebra mussel



California mussel



Villosa iris mussel

(Mussels not shown to scale)

The Gene Repairer

The deep-sea mussel lives in one of the most hostile places on earth, the Mid-Atlantic Ridge, where hot-spring vents spew out highly toxic chemicals that continuously damage the creature's genetic makeup. Yet, special enzymes enable this mussel to keep mending its DNA. Scientists are studying these enzymes in hopes of discovering how to repair human DNA damaged by disease or aging.



in the mid-1980's when a transatlantic ship discharged its ballast water. Far from its natural enemies, the zebra mussel has multiplied rapidly in the Great Lakes and adjoining waterways, causing millions of dollars' worth of damage by clogging up water-intake pipes and encrusting boats, piers, and bridges. It has also crowded out some native mussel species.

There is, however, a plus side. Because zebra mussels are filter-feeders par excellence, they quickly clear murky lake waters by gobbling up the floating algae. Underwater green plants can then flourish again and provide a home for other lake inhabitants. Scientists are currently exploring the idea of using the mussels' filtering prowess to strain out harmful bacteria from public water sources and even to remove sewage from wastewater treatment plants.

Other Skills

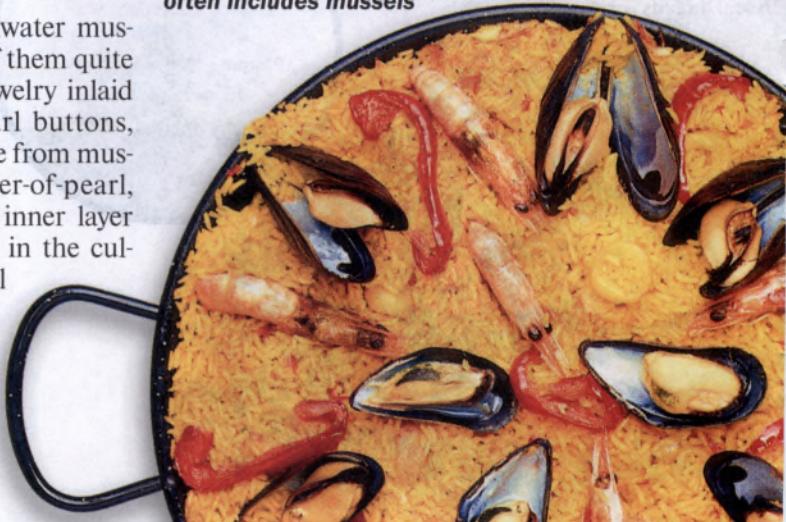
Did you know that certain freshwater mussels produce natural pearls, some of them quite valuable? If you have ever worn jewelry inlaid with mother-of-pearl or used pearl buttons, these too might well have been made from mussels. Shiny rainbow-colored mother-of-pearl, also called nacre, comes from the inner layer of their shells, and it is often used in the cultured pearl industry. A very small mother-of-pearl bead, cut from mussel shell, is inserted into an oyster. Thus stimulated, the oys-

ter begins coating the irritation with layers of nacre, eventually producing a pearl.

Of course, some sea mussels also feed us! For centuries people have enjoyed eating the mussels' delicate, nutritious meat in a variety of ways. In French homes you might sample *moules marinière*, that is, mussels steamed in a stock of white wine and shallots. The Spanish prefer them in the colorful dish paella, while the Belgians serve them in a large, steaming pot accompanied by French fries. Harvesting mussels commercially is big business around the world, although in some European countries family-run enterprises still operate. A word of warning: If you plan to sample this tasty food, make sure that your shellfish come from a reliable source, and never collect your own supply from the beach unless you are absolutely certain the water is unpolluted.

Who knows what other secrets the mussel will reveal? After all, some of these creatures are thought to live longer than a century! The mussel has a tiny heart that pumps clear blood, but it does not have a brain. So how does the mussel do the amazing things described above? The Bible answers: "Show your concern to the earth, and it will instruct you; and the fishes of the sea will declare it to you. Who among all these does not well know that the hand of Jehovah itself has done this?"—Job 12:8, 9.

Paella, a colorful Spanish dish, often includes mussels



An African City Where East Meets West

BY AWAKE! WRITER
IN SOUTH AFRICA

WHAT a colorful sight it is to walk down a Durban street! You will see that many have adopted Western-style clothing, especially the youth. But note, too, the older Zulu ladies with their modest, long dresses and their heads adorned with colorful scarves. There are also Indian ladies dressed in saris or Punjabi dress and trousers. As you approach the beachfront, you will likely see some Zulu men in elaborate costumes pulling rickshas. Truly, Durban is a unique African city, where East meets West. What is the history of this fascinating city?

The South African city of Durban has been inhabited for less than two centuries. About 40 colonists of European descent settled here in 1824. At that time the powerful kingdom of the Zulus under Shaka,



their warrior king, was centered to the north of Durban. Two decades later, Durban and the surrounding inland region were annexed by Britain. Several wars between the new colonists and the Zulus were fought during the 19th century.

Meanwhile, the English settlers found that sugarcane grew well in the coastal regions. To work their sugar plantations, they arranged for laborers to come from India, then another British colony. Between 1860 and 1911, over 150,000 Indians came to Durban. As a result, today the metropolitan area of Durban has a population of more than three million, made up of people from three distinct parts of the earth—indigenous Zulus, Asians from India, and people of British and western European descent.

The city has other interesting features. As can be seen in the accompanying photo, it

Photos: Courtesy Gonsal Pilley



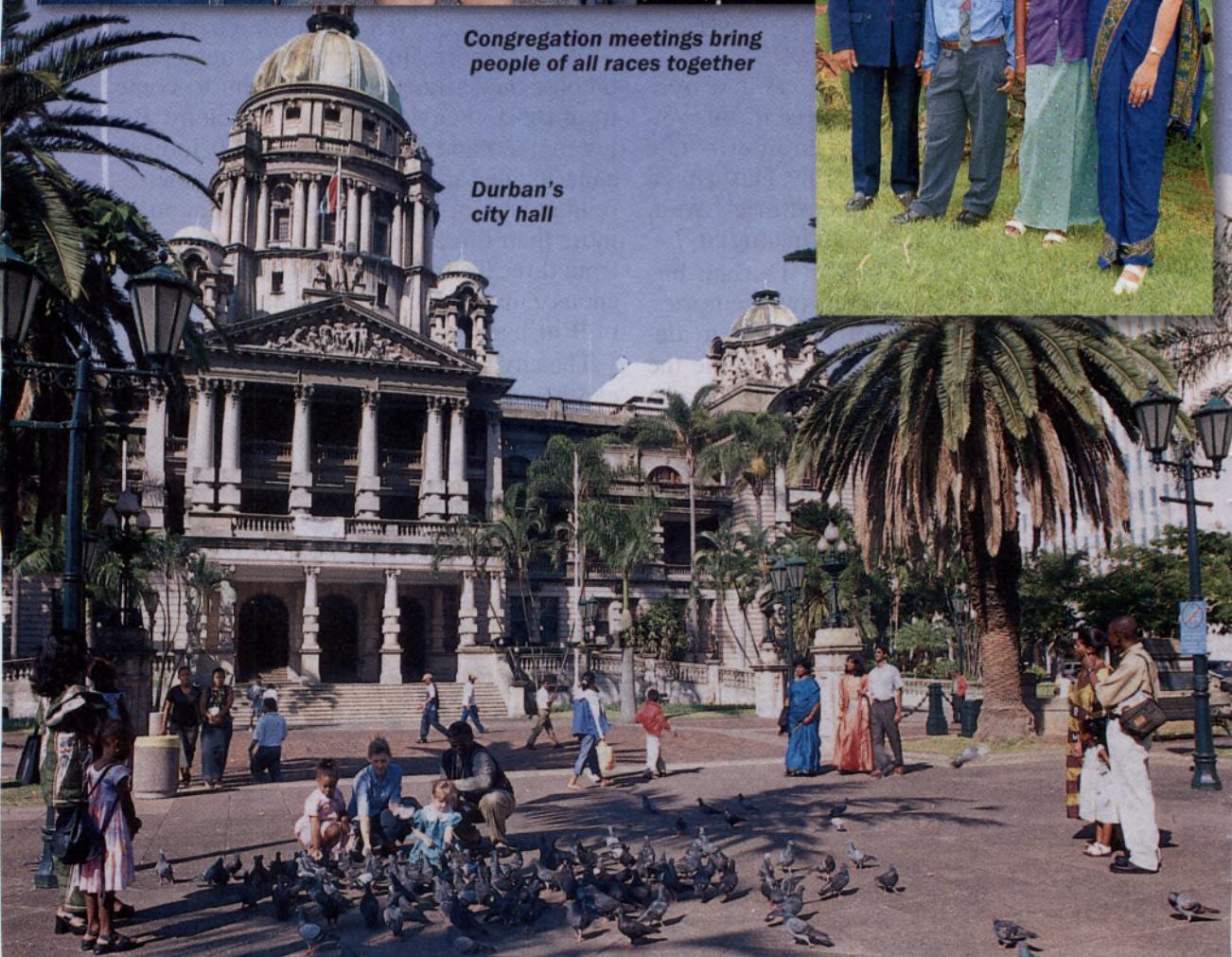


Alan, Rani, and their children



Congregation meetings bring people of all races together

Durban's city hall



has a natural harbor shielded from the Indian Ocean by a long finger of land called the Bluff. This attractive landmark is over 300 feet high and is covered with vegetation. Every day large ships pass into this naturally sheltered harbor. The book *Discovery Guide to Southern Africa* explains that Durban has "the largest and busiest harbour in Africa, ranked ninth in the world." Vacationers are drawn to Durban's fine beaches and enjoy its warm waters. There are ideal places for surfing, and bathers may take comfort in the safety provided by well-maintained shark nets.

Lovers of the Bible have an added reason for interest in the city. The Bible Students, as Jehovah's Witnesses were then known, set up a branch office here in 1910. Then, in April 1914, the first convention in Africa of the Bible Students was held in Durban. Some 50 people were in attendance, including delegates from distant parts of South Africa. At that historic convention, 16 new worshipers were baptized. A number of those in attendance were anointed Christians who proved faithful to death, including William W. Johnston, who was the first to manage a branch office in Africa.

Jehovah's Witnesses have arranged many other conventions in Durban since 1914. In December 2000, some 14,848 attended the two "Doers of God's Word" conventions held in the city, and 278 new ones were baptized. Consider one of the many Indian families in attendance. Ten years ago the father, Alan, was introduced to Bible truth by his daughter, Somashini. Alan was recovering from alcoholism and was searching for a purpose in life. Somashini, who was then only three years old, brought her father a book that she had found in a neighbor's house. Its title, *True Peace and Security—How Can You Find It?*, immediately appealed to Alan. He enjoyed what he read and began associating with Jehovah's Witnesses. Because

of what he learned from the Bible, Alan legalized his marriage. Soon his wife, Rani, became interested and began attending the meetings of Jehovah's Witnesses too. At that time the couple were living with Rani's parents, who belong to one of Christendom's churches. The parents opposed the young couple's newfound religion and gave them an ultimatum: "Either leave the Witnesses or get out of our house!"

Alan and Rani decided to leave, although accommodations were hard to find. Friends among Jehovah's Witnesses helped them to find a suitable place to live. In 1992, Alan and Rani were baptized as Jehovah's Witnesses. They continued to make progress, and today Alan serves as an elder in the Christian congregation.

There are more than 50 congregations of Jehovah's Witnesses in the Durban metropolitan area. Most of them are made up of Zulus. However, some congregations, especially near the center of the city, are made up of Zulus, Indians, and people of European descent. If you pay a visit to one of these meetings, you will see much more than East meeting West. Perhaps a smartly dressed African Witness will be presiding or an Indian Witness or a Witness of European descent. But one thing is sure: In the audience you will see living proof that the Bible has the power to unite people of all nations in warm and lasting friendship.

IN OUR NEXT ISSUE

How Tolerant Is God?

**Popular Celebrations
—Are There Hidden Dangers?**

**Autumn—A Spectacular
Time of Year**

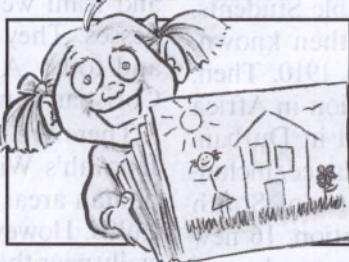
Modern Galley "Slaves"

"Tens of thousands of sailors on commercial ships are being treated like slaves," notes the *International Herald Tribune*. A report by the International Commission of Shipping revealed that these sailors are "subjected to poor safety conditions, excessive hours, unpaid wages, starvation diets, rapes and beatings." On some crews sailors who complain or who seek help from labor unions risk being blacklisted or even thrown overboard. The principal victims of this "modern slavery" are from developing lands. Because of economic problems in their home countries, many have nowhere else to turn for an income. Thus, according to the report's author, they end up "vulnerable, . . . cheated and robbed."

Loss of "Nature's Secrets"

"The UN estimates that up to 90% of the world's languages could die out over the next century, and with them much valuable knowledge about nature," states a BBC News dispatch. Native languages often serve as repositories for traditions, songs, and stories that are handed down from generation to generation, imparting valuable lessons on the local environment and its animal life. For example, the Turkana people of northwest Kenya have long observed the behavior of certain birds in order to tell when rain will fall. This helps them to determine when to plant crops. If their language dies out, many generations' worth of knowl-

edge will be lost. Already, 234 native tongues are known to have become extinct, and 2,500 more are perilously close to disappearing. "Nature's secrets, locked away in the songs, stories, art and handicrafts of indigenous people, may be lost forever," says the UN report, which warns of a reciprocal increase in the risk of crop failures.

Paper Still Preferred

More than a quarter of a century ago, it was predicted that the use of paper would decline as computers became office fixtures and information could be stored electronically. Yet, the demand for paper continues to rise. According to the *Vancouver Sun* newspaper, when it comes to the type of paper used in copiers and fax machines, Canadians used 25 percent more in 1999 than they did in 1992. That amounts to "66 pounds (30 kilograms) of paper a year for every Canadian, including children." One survey of office workers showed that although computers are initially used to view information, people still want a hard copy. The same holds true for those who have home computers, says the *Sun*. Children have become "ma-

jor paper consumers," wanting to print out everything they create or see on the computer screen.

The Threat of Organized Crime

"Internationally-organized crime is now a bigger threat to security for ordinary people than war." That, according to the Agence France-Presse news service, was a point made at a recent conference on transnational crime. Speaking at the conference in Tokyo, Pino Arlacchi, Under-Secretary-General at the UN Office for Drug Control and Crime Prevention, said: "The level and intensity of international crime have gone beyond what governments and the general population are prepared to accept." He cited trafficking in humans as the fastest growing of all types of international crime, with as many as a million women and children being spirited across borders by criminal groups, generating huge profits. "No single country can cope with transnational, organised crime by itself," said Bunmei Ibuki, formerly the political head of Japan's police agencies. "That is why regional or global-scale law enforcement efforts are becoming increasingly essential."

Our Space Junkyard

Ever since man began venturing into outer space about 40 years ago, he has been converting the region surrounding the earth into a junkyard. According to *The News of Mexi-*

co City, nearly 4,000 rockets have been launched, creating "more than 23,000 'observable' space objects, each of them larger than a cricket ball." Of these, about 6,000 are "junk," with an estimated combined weight of 1,800 tons. Collisions of space objects have produced some 100,000 smaller pieces of debris. While these pose no threat to the earth, they do pose a serious hazard to space travel because of their speed. A tiny speck of metal traveling at up to 31,000 miles per hour can crack a space station's window, knock a hole in a solar panel, or puncture the suit of an astronaut during a space walk. "NASA is working on Project Orion, a 'cosmic broom' to sweep the skies free of rubbish," says *The News*. "The idea is to blast the junk with lasers, . . . nudging them into the Earth's upper atmosphere where they should burn up harmlessly."

Homelessness Increasing

"In the 1948 Universal Declaration on Human Rights, the UN described access to adequate housing as essential, but, more than half a century later, the right to a secure home is by no means guaranteed," states BBC News. A recent UN report estimates that 100 million people throughout the world are homeless—including over 30 million children—and warns that the situation is getting worse. In developing countries, the UN blames the problem mainly on rapid urbanization. Additionally, in Southeast Asia and Africa, some 600 million people live in overcrowded, poor

quality housing, lacking adequate sanitation and water. Wealthier countries are not immune. In the United States, up to 700,000 people live on the streets. In some parts of Western Europe, 12 out of every 1,000 persons are homeless.

"A Dying Art"?



"Pickpocketing is a dying art in Osaka," Japan, because "young people are no longer interested in developing the skills," reports *Asahi Evening News*. According to a local police officer, it takes several years of apprenticeship to become adept at this type of theft. Young criminals, it seems, prefer easier ways of stealing. Cases of purse snatching, for instance, are soaring. One third of all suspects arrested for picking pockets last year in the Osaka Prefecture were 60 years of age or older. The oldest, a 78-year-old man, was arrested for the 12th time when caught in the act of taking an eyeglass case from the handbag of an elderly woman. "His eyesight is so poor he picked an eyeglass case thinking it was a purse," said an investigator.

Role-Model Driving

"Parents need to be aware that they could be serving as role models for their children both before they are licensed and when they are learning to

drive," says Susan Ferguson of the Insurance Institute for Highway Safety. As reported in *New Scientist* magazine, she and her colleagues checked the accident records of 140,000 American families, comparing parents and their children aged 18 to 21. Children of parents who had experienced three or more car accidents in five years were 22 percent more likely to crash their car themselves than were the children of parents who had no accidents. The same held true regarding such traffic violations as speeding or going through a red light. In these cases the children were 38 percent more likely to do the same as their parents. "Parents should set an example," says Jane Eason of Britain's Royal Society for the Prevention of Accidents. "It's never too early to teach people about road safety."

"The World's Largest Living Organism"

"Creeping largely unseen through the evergreen forests of eastern Oregon is the world's largest living organism, a fungus called *Armillaria ostoyae*," says *National Wildlife* magazine. "The fungus is at least 2,400 years old and covers more than 2,200 acres—or nearly 1,700 football fields—according to scientists with the U.S. Forest Service who discovered it." The fungus lives below ground, spreading out slowly and often using tree roots to go from tree to tree. But the fungus has a "dark side," the foresters say. "*Armillaria* causes a root disease that can eventually kill trees," the magazine reports.

FROM OUR READERS

Comfort for the Sick Thank you for the series "Comfort for the Sick." (January 22, 2001) Four years ago I was involved in an accident. Many times I felt that it would have been better if I had died. I have a lot of memory loss and have many troubled days as a result. When I read this series, I was encouraged.

T. M., Japan

Since the age of 15, I have had to cope with painful rheumatoid arthritis. The information helped me to realize that I need to learn to trust more in Jehovah, who is "a stronghold in the day of distress."—Nahum 1:7.

Y.F.R., Colombia

I am a full-time evangelizer. Shortly after moving to serve in a new area, I learned that I have diabetes. Your description of the vortex of emotions felt by someone with a chronic illness was marvelous! The articles helped me to reconsider my own situation in a more balanced way and to make adjustments in my life.

L. A., Italy

We are not sick, but the principles in the article have helped us a great deal with a problem we are facing. As is so often the case, the magazine was an answer to a specific prayer.

R. P. and L. P., Sri Lanka

A few weeks ago, I was told that I have a carcinoma on my liver. You can imagine the impact that had on me, since I had been healthy up till then. Today I picked up the January 22 issue and devoured the articles. They described all my doubts, thoughts, and emotions but, at the same time, promoted a positive viewpoint.

J. E., Spain

True-Life Experience I am writing about the touching experience of Bill and Rose

Meiners, "Countering Setbacks by Setting Goals." (January 22, 2001) It is encouraging to learn that they have been persevering for more than half a century. These life stories touch the deepest chords of the heart. I would like Bill and Rose to know that I am praying specifically for them.

V.G., Italy

For those of us who are healthy, this story of a man struggling with his disease for over 50 years was unimaginably inspiring. It helped me appreciate that as a healthy woman, I should hold my health in high esteem and make full use of my life.

P. V., Czech Republic

I have a mother who has been ill for close to 20 years. Right now she is despairing and wonders why she cannot get at least some relief. I read this article to her, but I benefited from it too. Now I understand why she feels depressed most of the time.

G.O.A., Nigeria

Bill and Rose, as well as many others who have to live with serious illness, are so brave! I think we who have it so much easier can learn from their example. Bill and Rose, keep being strong! You are an example to us!

I. S., Germany

Teen Dating I am 15 years old, and I enjoyed the article "Young People Ask . . . What if My Parents Think I'm Too Young to Date?" (January 22, 2001) Kids at school ask me if I'm gay because I do not date. I've usually told them that my parents don't let me date, but I've always wanted to give them a better answer. Having read this article, now I know how to answer their questions. Thank you very much for thinking about us teenagers.

C. G., United States

IS YOUR CHILD SAFE?

According to the U.S. National Highway Traffic Safety Administration (NHTSA), car crashes are the leading cause of death among children between 5 and 14 years of age. Says NHTSA: "Over 50% of children who die in crashes are unrestrained [by safety devices]. In addition, 4 out of 5 children are improperly restrained."

The NHTSA offers a number of safety tips and cautions for those who are accompanied by children while driving. Although laws vary from country to country and even from state to state, these guidelines may serve as food for thought to many parents and guardians of children. Please check your local laws and do whatever you can to keep your precious cargo safe!

SAFETY TIPS

The safest place for all children is in the back seat.

- 1 Infants should be placed in a rear-facing child safety seat in the backseat of the car.
- 2 A child at least a year old and weighing at least 20 pounds may be placed in a forward-facing seat.
- 3 At 40 pounds, the child can use a "booster seat," which is secured by one of the car's lap and shoulder belts.
- 4 At approximately 80 pounds and a height of about four feet nine inches, the child may begin using an adult safety strap.

CAUTIONS

Children should not sit in the front passenger seat until they are at least 13 years of age. Front-passenger air bags can cause serious injuries to younger children and babies.

When a booster seat is used, a lap belt alone will not provide sufficient protection if the booster seat does not have a shield.

Do not think that a shoulder belt alone will protect a small child; in the event of a crash, the belt may cut across the neck of the child, causing serious injury or even death.

Follow instructions closely when installing and using child seats. According to NHTSA, "even the 'safest' seat may not protect your child if it isn't used correctly."

Proper installation of a child seat includes securely fastening the seat belt



THE ARTICLE CAME ON TIME

"I WOULD like to thank you for the article 'Spots Before Your Eyes?' in the June 8, 2000, issue of *Awake!*" writes Gloria, who lives in Quebec, Canada. "For a few years now, I have noticed small spots and was told it was normal. Lately I started seeing many more, and it bothered me.

"The article said that if you notice an increase in spots, it is better to have your eyes checked. That is what I did. I saw an ophthalmologist, and he found a tear in my retina. The doctor recommended minor laser surgery and tried to explain the procedure to me. I showed him the illustration of the eye on page 24 of *Awake!* He used the illustration to explain things to me and then looked at the cover and said, 'Oh—*Awake!*' and kept the magazine in his file.

"The operation went well, and I am very happy. Thanks to *Awake!* I was made aware of this rupture just in time, as otherwise my retina could easily have detached more."

Although *Awake!* is not a medical journal, it often includes informative reports on health and medicine. While even the best of medical treatment cannot give us perfect health, the Creator of the human body offers such a guarantee. How does he purpose to heal humankind? Can his promises be trusted?

