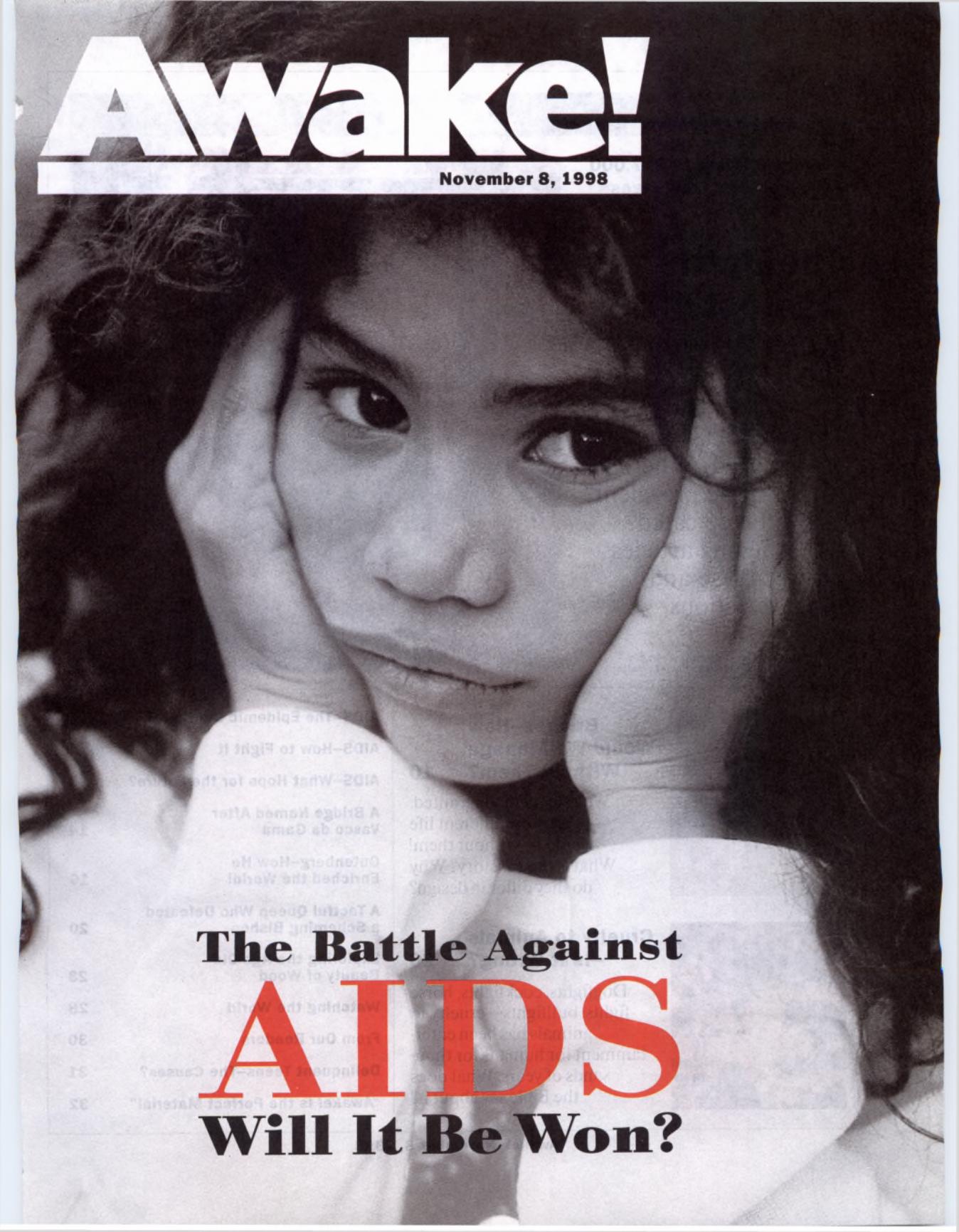


awake!

November 8, 1998



The Battle Against **AIDS** Will It Be Won?

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The Battle Against AIDS Will It Be Won? **3-9**

How is AIDS transmitted? Where is it now more prevalent? Can it be defeated? The opening articles answer these and other questions.

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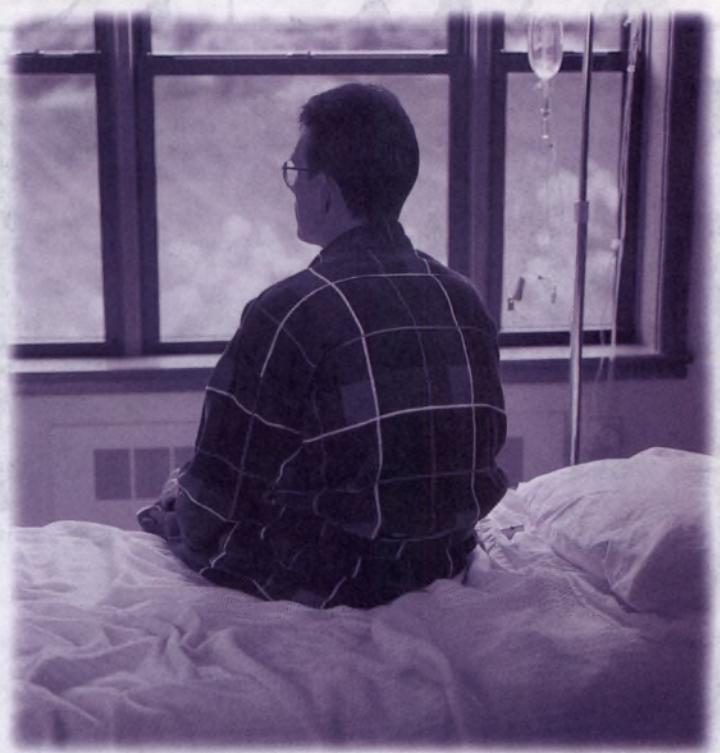
Bridges—How Would We Manage Without Them? **10**

We take them for granted. Yet, how different life would be without them! What is their history? Why do they differ in design?



Cruelty to Animals—Is It Wrong? **26**

Dogfights, cockfights, horse fights, bullfights—cruelty to animals has been entertainment for humans for thousands of years. What does the Bible say about it?



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KAREN grew up in the western United States.* As one of Jehovah's Witnesses, she maintained high moral standards throughout her youth. In 1984, when she was 23 years old, she married Bill, who had been a Witness for only two years. They were blessed with two children, a boy and a girl.

By 1991 their love had deepened, and they were content and happy. Late that year, Bill developed a white spot on his tongue that persisted. He visited a doctor.

Shortly after that, Karen and the children were outside raking leaves. Bill sat on the porch step and called Karen to sit beside him. He put his arms around her waist and said with tears in his eyes that he loved her and wanted to live forever with her. Then why the tears? The doctor suspected that Bill had been infected with HIV, the virus that leads to AIDS.

The family was tested. Bill and Karen's results were positive. Bill had become infected before he became one of Jehovah's Witnesses; he, in turn, had passed the infection on to Karen. The children's results were negative. Within three years, Bill was dead. Karen says: "I don't know how to express what it is like to watch the once handsome man you love and intend to live with forever slowly melt away and shrivel to skin and bones. I cried many nights. He died three months short of our tenth wedding anniversary. He was a good father and a good husband."

Though a doctor told Karen that she would soon follow her husband into death, she is still alive. The infection has progressed to the early stages of AIDS.

Karen is but one of about 30 million people now living with HIV/AIDS,

AIDS

The Epidemic Continues

a figure larger than the combined populations of Australia, Ireland, and Paraguay. Estimates indicate that Africa has 21 million of these victims. According to United Nations figures, by the

turn of the century, that number could soar to 40 million people. One UN report says that the disease rivals the greatest epidemics of history. Of the world's sexually active adults aged 15 to 49, 1 in 100 has already been infected with HIV. Of these, only 1 in 10 realizes that he or she is infected. In some parts of Africa, 25 percent of the adults are infected.

Since the beginning of the epidemic in 1981, an estimated 11.7 million people have died of AIDS. It is estimated that in 1997 alone, about 2.3 million people perished. Nevertheless, there are fresh reasons for optimism in the battle against AIDS. During the past few years, there has been a drop in new AIDS cases in wealthy nations. In addition, promising drugs hold out hope of better health and prolonged life.

How can you protect yourself against AIDS? What are the latest developments in treatment and vaccines? Will the disease ever be vanquished? These questions will be answered in the following articles.

* Names have been changed.



AT PRESENT there is no cure for AIDS, and medical science appears unlikely to find one soon. While new treatments delay the progression of the disease, it is far better to avoid infection in the first place. Before we discuss prevention, however, let us consider how the AIDS virus (HIV) is and is not passed from person to person.

A person may be infected in four primary ways: (1) by using a contaminated needle or syringe, (2) through sexual intercourse (vaginal, anal, or oral) with an infected person, (3) by blood transfusions and blood products, although this threat has been reduced in more developed countries where blood is now screened for HIV antibodies, and (4) by his or her HIV-infected mother, who can infect the baby either before or during birth or while breast-feeding.

According to the U.S. Centers for Disease Control and Prevention (CDC), present scientific evidence says that (1) you cannot catch AIDS as you would a cold or the flu, (2) you cannot get it from sitting next to someone who has AIDS or by touching or hugging a person who is infected, (3) you cannot get it by eating food handled, prepared, or served by an infected person, and (4) you cannot get it by sharing toilets, telephones, clothes, or eating and drink-

AIDS

How to Fight It

ing utensils. Moreover, the CDC says that the virus is not transmitted by mosquitoes or any other insect.

Keys to Prevention

The AIDS virus lurks in the blood of infected people. If an infected person receives an injection, some blood along with the virus may be left on the needle or in the syringe. If someone else is injected with a needle that has thus been contaminated, the virus could be passed on. Never be afraid to ask a doctor or a nurse when you are in doubt about a needle or a syringe. You have a right to know; your life is at stake.

The AIDS virus is also present in the semen or the vaginal secretions of infected people. Thus, concerning prevention, the CDC recommends: "Abstinence is the only sure protection. If you do have sexual intercourse, wait until you are in a long-term, mutually faithful relationship, such as marriage, with an uninfected partner."

Notice that for you to be protected, a "mutually faithful relationship" must be maintained. If you are faithful but your partner is not, you are not protected. This often presents a difficult problem for women who live in societies where they are dominated sexually and economically by men. In some lands women are not even permitted

Awake!

Why Awake! Is Published *Awake!* is 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.

Would you welcome more information? Write Watch Tower at the appropriate address on page 5. Publication of *Awake!* is part of a worldwide Bible educational work supported by voluntary donations.

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Who Are Being Infected With HIV?

Worldwide, about 16,000 people become infected each day. It is said that more than 90 percent live in developing countries. About 1 in 10 is a child under 15 years of age. The rest are adults of whom over 40 percent are women and over half are between the ages of 15 and 24.—World Health Organization and the Joint United Nations Programme on HIV/AIDS.

to discuss sex with men, much less to negotiate safer sex practices.

However, not all such women are powerless. A study in one West African land showed that some financially independent women were able, without violent consequences, to withhold sex from their infected husbands. In New Jersey, U.S.A., some women refused sex if the man did not want to wear a condom. Of course, while latex condoms can give protection against HIV and other sexually transmitted diseases, they must be used correctly and consistently.

When to Test

Karen, mentioned in the preceding article, could have done little to protect herself against infection. Her husband was infected several years before their marriage, and they married at a time when the epidemic and

HIV testing were in their early stages. Now, however, HIV testing has become a routine procedure in some countries. So if a person has any doubt about his or her status regarding HIV, it is wise to test *before entering into courtship*. Karen's advice: "Choose your marriage mate wisely. A wrong choice can cost you dearly, even your life itself."

Testing may help to protect an innocent mate in cases of adultery. Since HIV might not show up on a test until up to six months after infection, several tests might be necessary. If sexual relations are resumed (thus implying that the adulterer is forgiven), the use of a condom can help safeguard against infection.

How Can Education Help?

It is noteworthy that though the Bible was written long before the emergence of AIDS, living by its principles works to protect against the disease. For example, the Bible condemns sex outside marriage, demands fidelity within marriage, and says that Christians should marry only those who similarly apply Bible principles. (1 Corinthians 7:39; Hebrews 13:4) It also prohibits all forms of substance abuse and the intake of blood, which defile the body.—Acts 15:20; 2 Corinthians 7:1.

It is wise to educate yourself about the risks and dangers that might be involved in contact with HIV-positive persons. Learning about AIDS equips people to safeguard themselves against it.

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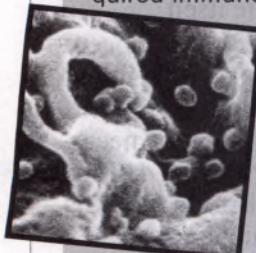
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The Relationship Between HIV and AIDS

HIV stands for "human immunodeficiency virus," the virus that slowly destroys parts of the body's disease-fighting immune system. AIDS stands for "acquired immunodeficiency syndrome." It is the final, life-threatening stage of HIV infection. The name describes how HIV has severely damaged the immune system, making the patient prey to infections that the immune system would otherwise combat.



The AIDS Action League says: "AIDS in most cases is preventable. *Until a cure is found education is the best and for now the only [community] defense against AIDS.*" (Italics ours.) It is good for parents to talk frankly with each other and with their children about AIDS.

What Are the Treatment Options?

Disease symptoms do not usually appear until six to ten years after a person is infected with HIV. During those years, a battle rages within the body. Individual viruses multiply and kill immune system cells. Immune system cells fight back. Eventually, as billions of new viruses are produced each day, the immune system is overwhelmed.

Various drugs have been developed to try to help the immune system, drugs with complex names identified by letters—AZT, DDI, and DDC. Though some believed that these drugs promised dramatic benefits and even a potential cure, such hopes were quickly dashed. They not only lose their effectiveness with time but also cause dangerous side effects in some people—depletion

of blood cells, blood clotting disorders, and nerve damage to the hands and feet.

Now a new class of drugs has arrived: protease inhibitors. Doctors prescribe these in three-drug combinations with other anti-viral medicines. Tests have shown that while this triple therapy does not kill the virus, it stops, or nearly stops, its multiplication in the body.

Triple therapy has brought dramatic improvement in the health of those who are sick. However, experts believe that the medication works best when given early to people infected with HIV, before symptoms display themselves. When that is done, it may be possible to prevent, perhaps indefinitely, the infection from developing into full-blown AIDS. Since the treatment is new, it remains to be seen how long the therapy will suppress the infection.

Triple therapy is expensive. The average cost of three antiviral drugs plus lab testing is \$12,000 a year. Apart from the financial burden, a patient on triple therapy has to make many trips to the refrigerator, where the drugs must be kept. Typically, a person takes some pills twice a day and others three times a day. Some should be taken when the stomach is empty, others when the stomach is full. Therapy becomes far more complicated when additional medications must be taken to combat the many other infections to which the AIDS patient is susceptible.

A major concern to doctors is what might happen if a person discontinues triple therapy. Virus multiplication would resume unabated, and those viruses that have survived the treatment may be resistant to the drugs that the person had previously been taking to fight them. Drug-resistant strains of HIV would be more difficult to treat. Moreover, these superviruses could be passed on to other people.

Are Vaccines the Answer?

Some AIDS researchers believe that the key to halting the worldwide AIDS epidemic is a safe, effective vaccine. Successful vaccines against yellow fever, measles, mumps, and rubella are made from weakened viruses. Normally, when a weakened version of a virus is introduced into the body, the immune system not only reacts to destroy it but also constructs defenses that will successfully defeat any invasion by the real virus.

Two recent experiments with monkeys have suggested that the problem with HIV is that even the weakened virus can turn lethal. In other words, the vaccine might cause the disease it is designed to protect against.

The quest for a vaccine has been disappointing and frustrating. HIV has remained unscathed by dozens of experimental con-

HIV testing before considering marriage is a wise choice



How Can You Tell Who Is Infected?

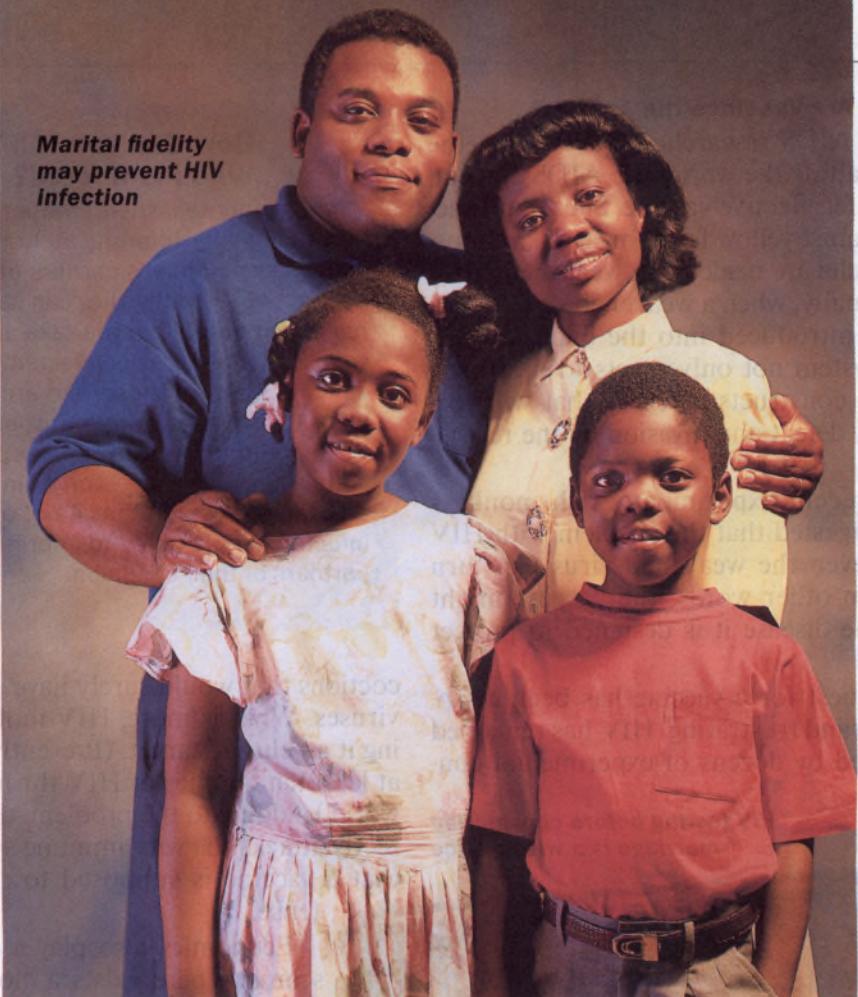
You cannot tell whether a person is infected just by looking at him or her. Though symptomless carriers of HIV may appear to be healthy, they can pass the virus on to others. Can you take a person's word for it that he is not infected? Not necessarily. Many of those who are infected with HIV are not aware of it themselves. Those who do know may keep it a secret, or they may lie. A survey in the United States revealed that 4 out of 10 HIV-infected people failed to inform their sex partners of their condition.

coctions that would surely have slain lesser viruses. What is more, HIV mutates, making it an elusive target. (Presently there are at least ten families of HIV throughout the world.) Adding to the problem, the virus directly attacks the very immune system cells that a vaccine is supposed to rally in defense.

Economics also play a role in research. There exists a "low level of commitment from private industry," stated the Washington-based International AIDS Vaccine Initiative. This was blamed on fears that a vaccine would not bring in profits, since most of it would be marketed in less-developed countries.

Despite the difficulties, researchers continue to investigate several approaches in the quest for a successful vaccine. At present, however, it seems unlikely that a vaccine will be produced soon. When a promising vaccine does emerge from the laboratory, then follows the laborious, expensive, and potentially risky task of testing it on humans.

**Marital fidelity
may prevent HIV
Infection**



AIDS What Hope for the Future?

APART from the lack of drugs to cure or prevent HIV infection, other factors work against suppressing the disease. One of these is that many people, not willing to change their life-style, are willing to risk infection. In the United States, for example, the infection rate has remained steady, despite a drop in the number of people who have developed full-blown AIDS. The reason suggested by the Associated Press is that "many people are not heeding warnings about prevention."

In the world's developing nations, reportedly home to about 93 percent of those infected with HIV, there are additional prob-

lems in confronting the disease. Many of these countries are too poor to provide even basic health-care services. Even if the new drugs were available in those lands—and for the most part they are not—the price of a year of treatment would cost more than many people earn in a lifetime!

Yet, let us assume that a new, inexpensive drug were developed that would actually cure the disease. Would such a drug reach all those who need it? Probably not. Each year, according to the United Nations Children's Fund, about four million children die from five diseases that can be prevented by inexpensive, existing vaccines.

What about infected people living in countries where they cannot obtain drugs for treatment? Ruth Mota, of International Health Programs in Santa Cruz, California, has helped organize HIV prevention and care programs in dozens of developing countries. She says: "From my experience, a positive attitude is just as im-

"The Congregation Was Wonderful"

The apostle Paul urged fellow Christians: "Let us work what is good toward all, but especially toward those related to us in the faith." (Galatians 6:10) The mother of Karen, mentioned in the first article, relates how the local congregation of Jehovah's Witnesses reacted when they learned that Karen and Bill were ill with HIV. She says: "The congregation was wonderful. When Bill came down with pneumonia, Karen was ill herself and was struggling to care for him and the children. The brothers cleaned their house, repaired their car, and washed their laundry. They helped them care for legal affairs and move to another home. They bought and cooked food for them. There was a genuine outpouring of emotional, spiritual, and material support."



"Healing is much broader than putting chemicals in your body. It involves attitude, social support, spirituality, and nutrition."

—Ruth Mota

portant as access to medication. I know people who have lived with HIV for 10 to 15 years and who have never taken a medication. Medications are beneficial, but healing is much broader than putting chemicals in your body. It involves attitude, social support, spirituality, and nutrition."

There Will Be a Solution

Is there any reason to believe that AIDS will one day be vanquished? Yes, there is.

The best hope is contained in the words of what many call the Lord's Prayer or the Our Father (Paternoster). In that prayer, recorded in the Bible book of Matthew, we implore that God's will be done on earth as it is in heaven. (Matthew 6:9, 10) It is not God's will for humans to be forever plagued with illness. God will answer that prayer. In doing so, he will bring an end not only to AIDS but to all other diseases that plague humankind. Then, "no resident will say: 'I am sick.'"—Isaiah 33:24.

Meanwhile, the best strategy is prevention. For many diseases, there are two options: You can either prevent them or perhaps cure them. With HIV, there is no such choice. It can be prevented, but at present it cannot be cured. Why take risks that endanger your life? Prevention is certainly better than *no cure*.

BRIDGES

HOW WOULD WE MANAGE WITHOUT THEM?

"Praise the bridge that carried you over."—George Colman, 19th-century English playwright.

WHEN was the last time you crossed a bridge? Did you even notice it? Millions of people cross bridges every day. We just take them for granted. We walk, ride, or drive over them or under them, perhaps without giving a thought to it. But what if they were not there?

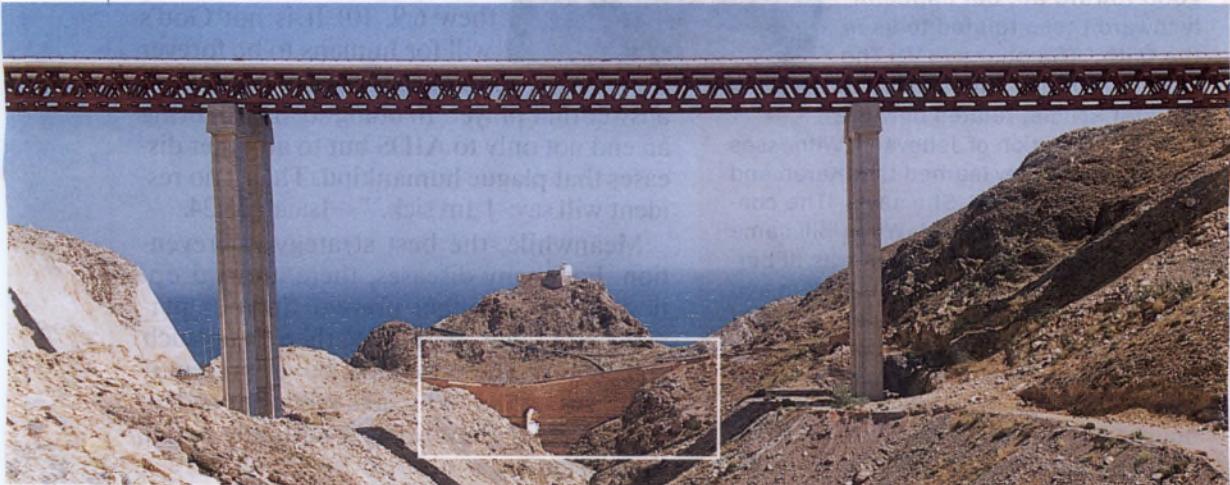
For thousands of years, man and beast have been able to cross otherwise impassable gaps, whether a river, a chasm, or a ravine, thanks to all kinds of bridges. It is hard to imagine some cities without their bridges—Cairo, London, Moscow, New York, Sydney, and many others. Yes, bridges have an ancient past.

Bridges of the Past

Over 2,500 years ago, Queen Nitocris of Babylon built a bridge across the Euphrates River. Why? The Greek historian Herodotus answers: "[Babylon] was divided by the river into two distinct portions. Under the former kings, if a man wanted to pass from one of these divisions to the other, he had to cross in a boat; which must, it seems to me, have been very troublesome." Using timber, baked brick, and stone blocks for building materials and iron and lead for mortar, Nitocris erected a bridge over one of the most famous rivers of ancient times.

Sometimes bridges have affected the

Modern girder bridge above ancient arch bridge in Almería, Spain





course of history. When King Darius the Great of Persia set out on his military campaign against the Scythians, he wanted to take the fastest overland route possible from Asia to Europe. That meant leading his army of 600,000 men across the Bosphorus Strait. It was dangerous to cross the strait by boat because of heavy fog and treacherous currents, so Darius lashed boats together until he had made a floating pontoon bridge 3,000 feet long. Today, you don't have to go to as much trouble as Darius did to cross the strait. You can make the trip in less than two minutes by automobile if you use the Bosphorus bridges at Istanbul, Turkey.

If you are a Bible student, you may be able to think of an occasion when *the lack* of a bridge affected the course of history. Recall what happened when King Nebuchadnezzar of Babylon laid siege to the island city of Tyre. For 13 years he tried to conquer the city, but he was unable to do so, partly because there was no bridge between the island and the mainland. (Ezekiel 29:17-20) The island city was not to be conquered for another three hundred years, when Alexander the Great built a causeway from the mainland to the island.

By the first century, 'all roads led to Rome,' but the Romans needed bridges as well as roads to bind the empire together. Using stones weighing as much as eight tons each, Roman engineers built arched bridges that were so skillfully designed that some of them are still standing after more than two thousand years. Their aqueducts and viaducts were also bridges.

In the Middle Ages, bridges sometimes served as fortresses. In 944 C.E., the Saxons built a timber bridge across the Thames River in London to ward off an attack by the Danes. Almost three hundred years later, this timber bridge was replaced by Old London Bridge, celebrated in history and in rhyme.

By the time Queen Elizabeth I took the throne of England, Old London Bridge was no longer just a stone fortress. Buildings had been erected right on the bridge. There were shops on the main floor. And the upper floors? They served as living quarters for wealthy merchants and even for members of the royal court. London Bridge had become a center of London's social life. The rents that were collected for the shops and residences helped pay for the maintenance of the bridge, and, yes, London Bridge was a toll bridge!

While Europeans were busy building bridges out of timber and stone, the Incas of South America were making them out of rope. One famous example is the bridge of San Luis Rey, which spanned the Apurimac River in Peru. The Incas took the fibers of a plant and twisted them together to make cables as thick as a man's body. They laid the cables across stone pillars and then stretched them across the river. After securing the cables at both ends, they suspended a platform of wooden planks to make a roadway. Maintenance crews renewed the cables every two years. This bridge was so well constructed and maintained that it lasted for five hundred years!

Bridges and Our Changing Needs

Bridges must be able to resist earthquakes, strong winds, and temperature changes. As we have seen, until quite recently engineers used timber, brick, or stone in bridge construction. When the automobile came into use at the end of the 19th century, existing bridges needed to be improved and enlarged to accommodate heavier traffic.

The invention of the steam locomotive also gave impetus to bridge building and design. The most convenient rail routes often stretched across a wide channel or a deep chasm. Could a bridge be built to span the gap and support the weight as more and

BRIDGE DESIGNS

1. GIRDER BRIDGES are often used on highways.

The girders rest on piers or abutments. These bridges can span up to 1,000 feet.

2. TRUSS BRIDGES are supported by trusses shaped like triangles. These bridges, often used for railways, are built to span canyons, rivers, and other obstacles.

3. In ARCH BRIDGES each span forms an arch. This is one of the oldest types of bridge. The Romans built this kind of arch in their aqueducts and viaducts and used a keystone to lock the arch. Many are still standing today.

4. CABLE-STAYED BRIDGES resemble suspension bridges except that the cables are connected directly to the towers.

5. MOBILE BRIDGES can be raised or swung around to allow ships to go through. London's Tower Bridge is a good example.

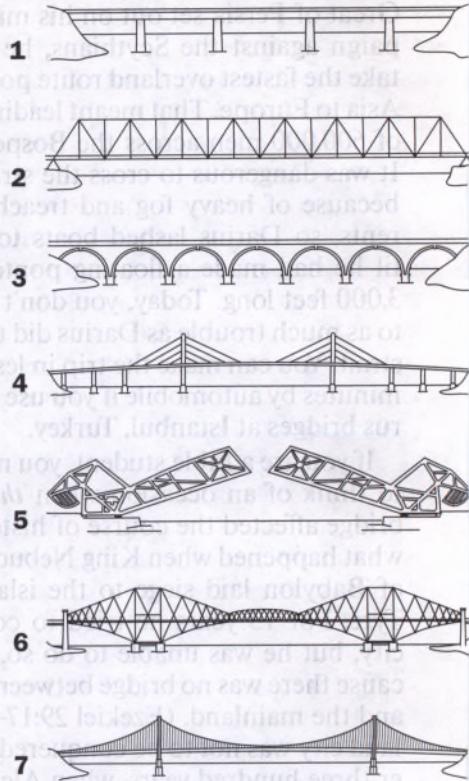
6. CANTILEVER BRIDGES are explained in the main text.

7. SUSPENSION BRIDGES are explained in the main text.—*World Book Encyclopedia*, 1994.

more freight cars were added? Cast iron bridges filled the need for a time. One of the most famous bridges of the early 19th century is the suspension bridge over the Menai Strait in North Wales, designed by the Scottish engineer Thomas Telford and completed in 1826. It spans 579 feet and is still in use! But cast iron tended to be brittle, and bridge failures were common. Finally, in the late 1800's, steel began to be manufactured. This material had properties that were suitable for use in building longer, safer bridges.

Types of Bridge Structures

There are seven main bridge designs. (See the box above.) Here, we will briefly discuss two of them.



Cantilever bridges have two massive towers, on opposite sides of the river. Beams are anchored to each tower, much as a diving board is fastened to the edge of a swimming pool. To complete the bridge, the beams are then joined in the middle by a rigid span.

Where there is a raging river or where the riverbed is extremely soft, cantilever construction is often preferred because it does not require that piers be sunk in the middle of the riverbed. Because of their rigidity, cantilever bridges are ideal for carrying such heavy traffic as railroad trains.

Perhaps you have seen an acrobat in a circus walk across a tightrope. Did you realize that he is actually walking across a

**Brooklyn Bridge, New York, U.S.A.
(suspension)**



Tower Bridge, London, England (movable)



Sydney Harbour Bridge, Australia (arch)



SOME FAMOUS BRIDGES

SUSPENSION

Storebaelt	Denmark	5,320 ft
Brooklyn	U.S.A.	1,595 ft
Golden Gate	U.S.A.	4,200 ft
Jiangyin Yangtze	China	4,544 ft

CANTILEVER

Forth (two spans)	Scotland	1,710 ft each
Quebec	Canada	1,800 ft
Mississippi River	U.S.A.	1,575 ft

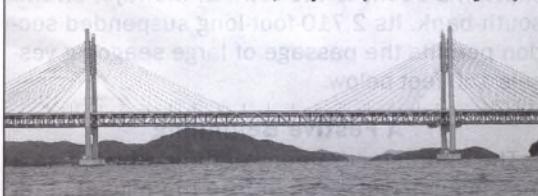
STEEL ARCH

Sydney Harbour	Australia	1,650 ft
Birchenough	Zimbabwe	1,080 ft

CABLE-STAYED

Pont de Normandie	France	2,808 ft
Skarnsundet	Norway	1,739 ft

Seto Ohashi, Japan (cable-stayed)



bridge—a *suspension bridge*? Some suspension bridges in use today are not much more complicated than a tightrope. They may consist of a cable anchored at both ends with a basket hung on it. The passenger sits in the basket and propels himself at a slight downward angle until he reaches the other side. People around the world use simple rope bridges all the time.

Of course, you would hardly think of driving an automobile across a bridge made of rope. After iron-link chains and steel-wire cables were invented, it became possible to build suspension bridges that could support heavy loads. Modern suspension bridges may have a main span that extends 4,000 feet or more. A suspension bridge usu-

ally consists of two piers made of steel, each supporting a tower. Steel cables, made up of thousands of wires, are secured to the towers and to the roadway below. The cables are the main supports of the weight of the traffic and the roadway. When properly constructed, a suspension bridge is one of the safest bridges in the world.

In the past, you may have taken bridges for granted. However, the next time you walk across a familiar bridge, ask yourself: ‘What do I know about this bridge? When was it built?’ Look at it closely. Is it a cantilever, suspension, or other type of bridge? Why was this particular design chosen?

Then, as you cross, look down and ask yourself, ‘How would I manage without it?’



A BRIDGE NAMED AFTER VASCO DA GAMA

BY AWAKE! CORRESPONDENT IN PORTUGAL

THE Portuguese newspapers were replete with the news—one of the longest bridges in Europe had just been inaugurated with a display of fireworks. March 29, 1998, marked the opening of the 10.7-mile-long Vasco da Gama Bridge. Named after the Portuguese navigator who opened the sea route from Western Europe to India in the 15th century, the new bridge opens new routes to the industrialized north of the country, to the white beaches of the south in Algarve, and to Spain.

The bridge, the fifth longest in the world, spans the Tagus River estuary from Portugal's capital, Lisbon, to the town of Montijo, on the south bank. Its 2,710-foot-long suspended section permits the passage of large seagoing vessels 150 feet below.

A Festive Beginning

The opening ceremony actually started as a massive party a week before the official inauguration. Yes, excitement was high on Sunday, March 22, as 15,000 people were invited to a traditional Portuguese meal of feijoada, or bean stew. Where would so many be fed? Naturally, on the new bridge! What a sight to see a table stretched out over three miles of the bridge! The meal was a success, and the people were appreciative of the gesture.

A Growing Need

Why was such a bridge necessary? Since 1966, Lisbon had been using the 3,323-foot 25th of April suspension bridge. The average daily traffic was about 130,000 vehicles. Can you imagine the congestion at rush hour and on weekends? It was not uncommon for commuters to spend one or two hours to make this crossing between Lisbon and the south of Portugal. Thus the need for an alternative. The six lanes of the new bridge, located about eight miles farther up the

river, have brought some relief. It is designed so that when traffic on it reaches 52,000 vehicles a day, an additional lane can be added in each direction. It is hoped that traffic will move along quickly with a speed limit of 62 miles per hour.

Crossing the Bridge

Join us as we enter the bridge from the south, in Montijo. Leaving the land and marsh behind, we are now on the six-mile Tagus River section. It is high tide, and we are totally surrounded by water. The antiskid pavement gives a secure feeling together with the 1,500 pillars supporting the bridge's length.

We now arrive at the suspended section of the bridge. This span is supported by tension cables flaring out like triumphant sails from the top of two 500-foot-high towers. The foundations of the support pylons are sunk to a depth of from 160 to 210 feet. For further security, the bridge was built to withstand gusts of wind up to 140 miles per hour and seismic shocks four and a half times greater than the earthquake that destroyed much of Lisbon in 1755.

As we reach the end of the Vasco da Gama Bridge, the northeast edge of Lisbon greets us with palm trees. If we wish, we can now continue on to the superhighway that takes us to the north of the country. The new bridge makes it possible to travel on a fine highway system from the Algarve in the south to the province of Minho in the north, with no need to fight Lisbon's chaotic traffic!

Security Measures

In the building of this bridge, special attention was given to safety measures. A simple car breakdown could cause a major traffic jam. However, with 87 video cameras strategically placed on the bridge and its accesses, all irregulari-

ties in traffic are transmitted to monitors located at the police station and traffic control center. If a vehicle stops, an alarm goes off in the control room.

Additionally, a total of 36 pairs of SOS telephones have been placed every 1,300 feet on the ten-mile length. How does the emergency system work? Special vehicles regularly travel the bridge to care for needs that might arise, including combating fires and towing.

What about drastic changes in weather? Two meteorologic stations measure the speed, intensity, and direction of the winds and monitor weather and road conditions, adjusting speed limits according to atmospheric conditions.

The beauty of the symmetrical lines is intensified by nighttime illumination, consisting of 1,200 highway lights.

Ecological Challenges

Deciding on the final location of the new bridge was no easy task. What factors were involved?

Ecologically the site presented a great challenge. This was because the bridge crosses a natural reserve for birds, located at one of the largest estuaries in Western Europe. Extensive studies had to be made for the protection of flora, fish, birds, archaeological findings, water and air quality, and hundreds of acres of salt pans. Why does the Tagus estuary attract wildlife? It is one of the most important humid zones of Portugal and Europe, making it an ideal breeding ground for internationally protected migrating birds, such

as the black-winged stilt, the Kentish plover, and the little tern. During the autumn and winter periods, thousands of birds use this salt marsh as a high-tide refuge.

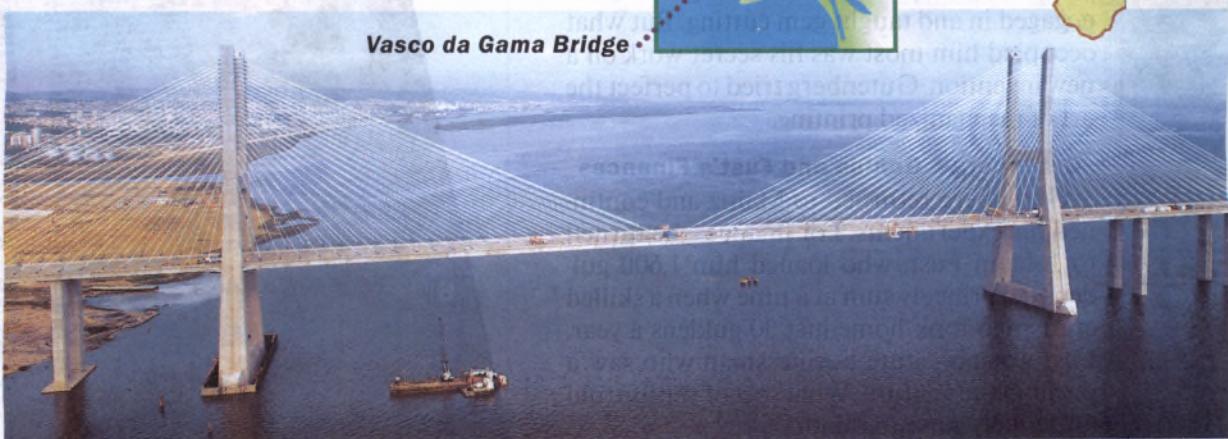
Long-standing fish nurseries had to be taken into account. This meant further care had to be exercised in order to disturb the fish as little as possible. Three thousand fish, basically sole and sea bass, were tagged so as to monitor the nurseries.

Suddenly, this quiet, natural habitat has been brought close to the city. To what point will the natural environment be affected? It is hoped that the measures taken to preserve the precious southern shore will protect the reserve's natural resources as much as possible.

The Vasco da Gama Bridge is truly a great accomplishment in engineering progress, architectural beauty, and symmetry. Portugal can justly be proud of the bridge that bears Vasco da Gama's name!



Vasco da Gama Bridge



WHICH invention of the past thousand years has most influenced your life? Was it the telephone, the television, or the motorcar? Probably it was none of these. According to many experts, it was mechanized printing. The man who is given credit for the invention of the first practical method is Johannes Gensfleisch zur Laden, better known as Johannes Gutenberg. He came from an aristocratic background and therefore did not have to serve a regular apprenticeship.

Gutenberg's brainchild has been described as "the great German contribution to civilization." Each surviving copy of his printing masterpiece—the so-called 42-line Gutenberg Bible—is worth a fortune.

Golden Mainz

Gutenberg was born in Mainz, in or about the year 1397. Situated on the banks of the Rhine River, Mainz was then a town of some 6,000 residents. It was known as Golden Mainz, being the center of a powerful league of towns. The archbishops in Mainz were electors of the Holy Roman Empire. Mainz was famous for its goldsmiths. Young Johannes learned much about metalwork, including how to emboss letters in metal. Because of political squabbles, he went into exile for some years to Strasbourg, where he engaged in and taught gem cutting. But what occupied him most was his secret work on a new invention. Gutenberg tried to perfect the art of mechanized printing.

Gutenberg's Genius and Fust's Finances

Gutenberg returned to Mainz and continued his experiments. For finances, he turned to Johann Fust, who loaned him 1,600 gulden—a princely sum at a time when a skilled craftsman took home just 30 gulden a year. Fust was an astute businessman who saw a profit in the venture. What sort of venture did Gutenberg have in mind?



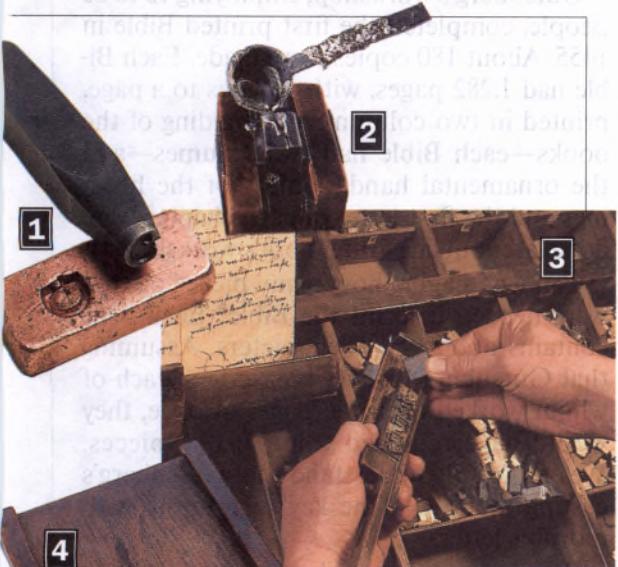
- 1. A steel stamp was used to punch the image of the letter into the copper matrix**
- 2. Molten alloy was poured into the casting mold. Once the alloy hardened, the extracted type bore a mirror image of the letter**
- 3. Type was placed in a setting stick to spell words, forming a line of text**
- 4. Lines were composed into columns in a galley**
- 5. The page of text was placed on the flat bed of the press**
- 6. A copperplate engraving of Gutenberg, dating back to 1584**
- 7. Today, one copy of the Gutenberg Bible is worth millions of dollars**



ENBERG

BY AWAKE!
CORRESPONDENT
IN GERMANY

ENRICHED THE WORLD!

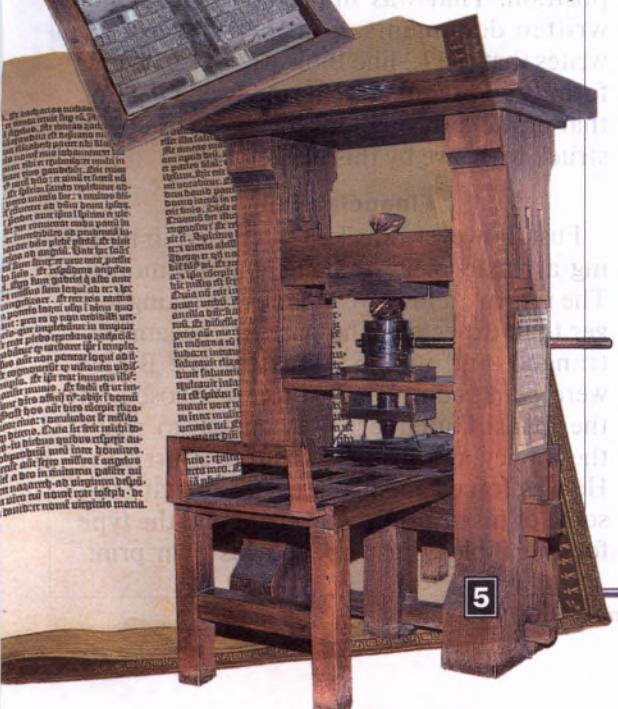


Pictures 1-4, 6, and 7: Gutenberg-Museum Mainz; picture 5: Courtesy American Bible Society

Gutenberg's keen eye observed that certain items were being produced in large numbers, each identical to the other. Coins, for instance, were minted, and bullets were cast in metal. So why not print hundreds of identical pages of writing and then assemble the pages in numerical order into identical books? Which books? He thought of the Bible, a book so costly that only a privileged few had personal copies. Gutenberg aimed to produce large quantities of identical Bibles, making them much cheaper than handwritten copies without sacrificing any of their beauty. How was this to be done?

Most books were copied by hand, which required diligence and time. Printing had been tried with hand-carved wooden blocks, each containing a page of writing. A Chinese man named Pi Sheng had even made individual letters of pottery to be used in printing. In Korea, letters made of copper had been used at a state printing works. But printing with movable type—individually made letters that can be rearranged for each new page—demanded vast quantities of letters, and no one had developed a way of producing them. That was reserved for Gutenberg.

As an experienced metalworker, he grasped that printing could best be achieved with movable letters made of, not pottery or wood, but metal. They would be cast in a mold, not carved or baked in an oven. Gutenberg needed molds that could be used to cast all 26 letters of his alphabet—in lowercase and capital—plus double letters, punctuation marks, signs, and numbers. In all, he calculated that 290 different characters were needed, each with dozens of replicas.



Down to Work

Gutenberg chose as the style for his book the Gothic script in Latin, which was used by monks in copying the Bible. Using his experience in metalwork, he carved on a small steel block an embossed mirror image of each letter and symbol, that is, a relief image on the surface of the steel. (Picture 1) This steel stamp was then used to punch the image into a small piece of softer metal, either copper or brass. The result was a true image of the letter sunk into the softer metal, called a matrix.

The next stage involved a casting mold, which was the product of Gutenberg's genius. The mold was the size of a man's fist and was open at the top and the bottom. The matrix for a letter was fixed to the bottom of the mold, and molten alloy was poured in at the top. (Picture 2) The alloy—tin, lead, antimony, and bismuth—cooled and hardened quickly.

The alloy taken from the mold bore an embossed mirror image of the letter at one end and was called type. The process was repeated until the required number of pieces of that letter had been produced. Then the matrix was removed from the mold and replaced by the matrix of the next letter. Thus, any number of pieces of type for each letter and symbol could be produced within a short period of time. All the type was of uniform height, just as Gutenberg required.

Printing could now begin. Gutenberg chose a passage of the Bible he wished to copy. With setting stick in hand, he used type to spell words, and he formed words into lines of text. (Picture 3) Each line was justified, that is, made to be of uniform length. Using a galley, he composed lines into a column of text, two columns to a page. (Picture 4)

This page of text was locked into position on the flat bed of a press and was then moistened with black ink. (Picture 5) The press—similar to those used in wine making—transferred the ink from the type onto

paper. The result was a printed page. More ink and paper were used and the process repeated until the required number of copies was printed. Since the type was movable, it could be reused to compose another page.

Printing Masterpiece

Gutenberg's workshop, employing 15 to 20 people, completed the first printed Bible in 1455. About 180 copies were made. Each Bible had 1,282 pages, with 42 lines to a page, printed in two columns. The binding of the books—each Bible had two volumes—and the ornamental hand-painting of the headings and the first letter of each chapter were done later outside Gutenberg's workshop.

Can we imagine how many pieces of type were needed to print the Bible? Each page contains about 2,600 characters. Assuming that Gutenberg had six typesetters, each of whom worked on three pages at once, they would have required some 46,000 pieces. We can readily understand that Gutenberg's casting mold held the key to printing with movable letters.

People were astounded when they compared the Bibles: Each word was in the same position. That was impossible with handwritten documents. Günther S. Wegener writes that the 42-line Bible was of "such uniformity and symmetry, harmony and beauty, that printers throughout the ages have been struck with awe by this masterpiece."

Financial Ruin

Fust, however, was less interested in making a masterpiece than in making money. The return on his investment was taking longer than expected. The partners became estranged, and in 1455—just as the Bibles were being completed—Fust foreclosed on the loans. Gutenberg was unable to repay the money and lost the ensuing court case. He was forced to surrender to Fust at least some of his printing equipment and the type for the Bibles. Fust opened his own print-

ery together with Gutenberg's skilled employee Peter Schöffer. Their business, Fust and Schöffer, reaped the good name that Gutenberg had earned and became the world's first commercially successful printery.

Gutenberg tried to continue his work by setting up another printery. Some scholars attribute to him other printed material dating back to the 15th century. But nothing achieved the majesty and splendor of the 42-line Bible. In 1462 misfortune struck again. As a result of a power struggle within the Catholic hierarchy, Mainz was burned and looted. Gutenberg lost his workshop for a second time. He died six years later, in February 1468.

Gutenberg's Heritage

Gutenberg's invention spread rapidly. By the year 1500, there were printing presses in 60 German towns and 12 other European countries. "The development of printing amounted to a communications revolution," states *The New Encyclopædia Britannica*. "Over the next 500 years a great many improvements were made in the mechanics of printing, but the fundamental process remained essentially the same."

Printing transformed European life, since knowledge was no longer the preserve of the privileged. News and information began to reach the common man, who became more aware of things going on around him. Printing made it necessary to give each of the national languages a standard written form that everyone could understand. Hence, the English, French, and German languages were standardized and preserved. The demand for reading material increased astronomically. Prior to Gutenberg there were a few thousand manuscripts in Europe; 50 years after his death, there were millions of books.

The 16th-century Reformation would have been stillborn without mechanized printing. The Bible was translated into Czech, Dutch,

English, French, German, Italian, Polish, and Slavonic, and the printing press made easy work of publishing tens of thousands of copies. Martin Luther made good use of the printing press in spreading his message. He succeeded in his endeavors where others, who lived before Gutenberg's press, had failed. No wonder Luther described the printing press as God's way "to spread the true religion throughout the world"!

Surviving Copies of the Gutenberg Bible

How many Gutenberg Bibles have survived? Until recently the number was believed to be 48—some of them incomplete—scattered around Europe and North America. One of the most elegant copies is a parchment Bible at the Library of Congress in Washington, D.C. Then, in 1996, a sensational discovery was made: A further section of the Gutenberg Bible was discovered in a church archive in Rendsburg, Germany. —See *Awake!* of January 22, 1998, page 29.

How grateful we can be that the Bible is now affordable to anyone! Of course, that does not mean that we can go out and buy a 42-line Gutenberg! How much is one worth? The Gutenberg Museum in Mainz obtained a copy in 1978 for 3.7 million deutsche marks (today about \$2 million). This Bible is now worth several times that amount.

What makes the Gutenberg Bible unique? Professor Helmut Presser, former director of the Gutenberg Museum, suggests three reasons. First, Gutenberg's Bible was the first book to be printed in the West with movable letters. Second, it was the first Bible ever printed. Third, it is breathtakingly beautiful. Professor Presser writes that in the Gutenberg Bible, we see "Gothic writing at its absolute zenith."

People of all cultures are indebted to Gutenberg's genius. He brought together casting mold, alloy, ink, and press. He mechanized printing and enriched the world.

A TACTFUL QUEEN WHO DEFEATED A SCHEMING BISHOP

By *Awake!* correspondent in South Africa

IN THE company of her loyal ladies, Queen Catherine Parr of England feels secure. King Henry VIII's illness, coupled with the intrigues of court life, is taking its toll on him. While the queen is conversing with a friend, one of her ladies rushes in, clutching a sheet of paper. Out of breath, she hands the sheet to Catherine. Disturbed by the lady-in-waiting's anxious frown, the queen hesitantly accepts the paper. Apparently, it was accidentally dropped by an official outside the queen's apartments.*

As she reads, Catherine turns pale. Her disbelief turns to horror. It is a list of heretical charges against her, signed by the king. She cries out and almost sinks to the ground, but friends support her. She tries to calm herself, to think clearly, but she is too disturbed. Mercifully, her ladies help her to bed.

She lies down, but she cannot rest. Fitfully, she reviews the events of her marriage to King Henry VIII. She was 31, twice married and widowed, and was considering marriage to the dashing Thomas Seymour. But the king had other plans. He proposed. How could she refuse? It was certainly an honor, but one fraught with problems. She became his sixth wife on July 12, 1543.

Henry was no longer the dashing, jousting, athletic figure of his youth. At the age of 52, he was greatly overweight, subject to sudden changes of mood, and plagued with ulcers in his legs to the extent that at times he could hardly walk and had to be conveyed in a chair.

* This fictional account is based on various sources, including *Foxe's Book of Martyrs*.

Background on pages 20-2: From the book *The Library of Historic Characters and Famous Events*, Vol. VII, 1895

Yet, Catherine had drawn on her considerable intelligence and talents to make the marriage work. She made herself a companion to his three children from previous marriages. She worked hard at being an entertaining wife. When his legs ached, she distracted him with lively discussion, often on religious matters. She brought the king a measure of tranquillity in his later years.

She now tries to review her life with the king. What had she done wrong? She reflects on a recent meeting with him. That evening some of his courtiers were present, and he seemed to be in a good mood. As was her custom, she raised a religious question they had discussed before. He was peevish and cut her short. She was surprised but dismissed it as moodiness on his part. Usually he enjoyed such discussions and did not object to her interest in religious matters.

She makes a mental note of who was present on that occasion. Her thoughts persistently return to one man—Stephen Gardiner, a known enemy.

A Scheming Bishop

Gardiner, bishop of Winchester and a royal councillor, is an influential man and an opposer of religious reform. He resents Catherine, both for her interest in religious change and for her influence with the king.

When Henry's chief adviser, Thomas Cromwell, maneuvered Gardiner out of his position as principal secretary to the king, Gardiner sought an opportunity to retaliate. He was involved in the plot that caused Cromwell's downfall and execution. Gardiner was also frustrated because Henry had



BISHOP STEPHEN
GARDINER

QUEEN CATHERINE PARR

overlooked him and appointed as Archbishop of Canterbury the comparatively obscure Thomas Cranmer, who had Protestant sympathies. Fortunately for Cranmer, Henry thwarted a plot hatched against him by Gardiner and others.

The danger to Catherine and her ladies at court is accentuated by another recent scheme of Bishop Gardiner. A young woman, Anne Askew, was an outspoken advocate of religious reform. She was in prison, awaiting execution for heresy. But Gardiner was interested in her for another reason. He wanted evidence that she had contact with influential ladies at court, which could also incriminate the queen. An associate of Gardiner, Thomas Wriothesley, one of the king's leading councillors, went to question Anne Askew.

Tortured on the Rack

Wriothesley interrogated Anne for some time, but he did not get the incriminating evidence he needed. Finally, he ordered her to be strapped on the rack,* although it was illegal to use this instrument of torture on a

* "An instrument of torture consisting of a frame with rollers to which a person's wrists and ankles were tied so that his joints were stretched when the rollers were turned."—*Oxford Advanced Learner's Dictionary*.

woman. When this failed to make her talk, Wriothesley and another councillor turned the rack themselves and stretched her to the limit, but they still did not get the desired information.

The thought of Anne Askew's suffering reduces Catherine to tears. She is aware that someone has entered the room. One of her ladies approaches and tells her that the king's physician, Dr. Wendy, has been sent by the king to examine her. The kindly doctor asks how she is and conveys the king's concern for her health.

The doctor explains how the king confided to him the plot against her and swore him to secrecy. Nevertheless, Dr. Wendy tells her the whole story—that after she left the king that night, he sarcastically commented that it was very comforting to him in his old age "to be taught by [his] wife."

Gardiner saw his opportunity and seized it. He said that the queen harbored heretics and that her activities were treasonable, posing a threat to the king's authority. He said that if allowed the time, he and others could put before the king evidence of this. The angry king agreed to sign a bill of articles against her.

After recounting these events, Dr. Wendy urges her to go to the king at the earliest opportunity and humbly ask his forgiveness. This is the only way to outwit her enemies, who will not rest until she is a prisoner in the Tower of London and until they have enough evidence to condemn her to death.

Catherine sees the wisdom of this advice, and late one night, upon hearing that the king is in his chambers, she dresses carefully and rehearses what she will say. Her sister and a friend, Lady Lane, accompany her.

A Wise, Prudent Queen

The king is sitting and joking with some of his gentlemen. With a smile he welcomes his

wife. Then he changes the conversation to religious matters. He asks Catherine to resolve doubts he has on some points. Catherine sees the trap immediately. She tries her best to respond with sincerity and honesty.

She says that God created woman after the man—inferior to him. She continues: ‘Since then God has appointed such a natural difference between man and woman, and your majesty being so excellent in wisdom and I so much inferior in all respects to you, how then does your majesty, in such complex religious matters, seem to require my judgment?’ She then acknowledges that he is head over her in all things, second only to God.

‘Not so,’ responds the king. ‘You have become a doctor to instruct us and not to be instructed or directed by us.’

She replies: ‘If your majesty take it so, then your majesty has very much mistaken me, who have ever thought it very unseemly, and preposterous, for the woman to take upon her the office of an instructor or teacher to her lord and husband; but rather to learn from her husband and to be taught by him.’ She further explains that when she spoke with him on religious matters and at times expressed an opinion, it was not to promote her ideas. Rather, by engaging in conversation, she hoped to distract him from the pain he felt because of his infirmity.

‘And is it even so, Sweetheart?’ says the king. ‘And tended your arguments to no worse end? Then perfect friends we are now again, as ever at any time before.’ Still seated, he summons her to him, embraces her warmly, and kisses her. He says that hearing this news is better than receiving a sudden gift of a hundred thousand pounds. They con-

tinued in pleasant conversation until he gives her permission to leave about midnight.

The next day the king takes his customary walk in the royal garden, accompanied by two gentlemen of his bedchamber. He has summoned the queen to join him, and she duly appears with three of her ladies. Henry has neglected to tell Catherine that this was the time formerly agreed upon for her arrest. He has also failed to inform Wriothesley, who was to carry out the arrest, of his reconciliation with the queen. While they are enjoying themselves, Wriothesley appears with 40 of the king’s guards to arrest the queen along with her ladies.

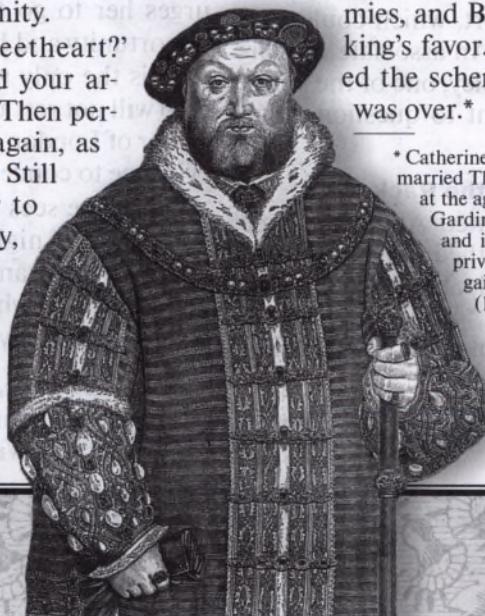
Henry separates from the party and summons Wriothesley, who drops to his knees. The rest of the party cannot hear what the king says, but they do hear him utter in rage the words, ‘Knave! Beast! Fool!’ He orders Wriothesley to get out of his sight.

When the king returns to her, Catherine tries to pacify him with mild words. She even speaks in Wriothesley’s behalf, saying that whatever he has done may have been done in error.

To this the king responds: ‘On my word, Sweetheart, he has been toward you an arant knave, and so let him go.’

Thus Catherine was saved from her enemies, and Bishop Gardiner lost the king’s favor. The queen had defeated the scheming bishop. The game was over.*

* Catherine Parr outlived Henry and finally married Thomas Seymour. She died in 1548, at the age of 36, shortly after giving birth. Gardiner, after serving time in prison and in the Tower of London, was deprived of his bishopric in 1550. He regained favor under Catholic Mary I (1553) and died in 1555.



Portrait by Holbein, from the book
The History of Protestantism (Vol. III)

HENRY VIII DENOUNCED
THOMAS WROTHESLEY
BEFORE THE QUEEN

Exploring the Age-Old Beauty of WOOD

By "Awake!" correspondent
in New Zealand



TLIMBER, particularly that of the native variety, is rapidly becoming a scarcity. Forests are being depleted at an alarming rate in many places in the world. Shortages of lumber supplies result in exorbitant prices for wood, one of the world's basic and formerly plentiful commodities.

It is ironic that here in New Zealand, there are thriving plantations of radiata pine, introduced in the 1930's, yet stands of indigenous trees, such as rimu, kauri, beech, and kahikatea, are dwindling.

Ageless Appeal of Solid Wood

For thousands of years, man has enjoyed shaping wood into all manner of useful items. The color, distinctive grain, and even odor given off by most types of wood have often delighted people. Items of varied usefulness have brought satisfaction year after year and, in some cases, century after century.

From earliest times, solid wood furniture has been used in homes. Using primitive tools, men and women have demonstrated flair and skill in constructing such basic things as tables, bowls, stools, barrels, chests, and chairs.

Modern technology has accelerated the speed with which such items are constructed today. Power tools, such as saws, drills, planes, and sanders, can efficiently, if somewhat noisily, craft raw timber into solid wood furniture. Most countries can boast of woodworking factories that churn out mass-produced furniture at reasonable costs.

But such furniture is often lacking in durability because either (1) substitutes (wood veneer, chipboard) replace solid wood or (2) techniques in the joinery rely on speedy construction, using staple machines or tacks or nails.

Returning to the Adz

In an attempt to overcome seeming inadequacies of modern technology, some are seeking the services of an ancient woodworking tool—the adz. It is defined as "a cutting tool that has a



Using the adz ▲

**and the
drawknife ▼**



thin arched blade set at right angles to the handle and is used chiefly for shaping wood." In New Zealand, the Maori people used greenstone (jade) adzes to hew canoes and shape poles for carving. Most adzes today, however, are metal.

In past centuries, carpenters used the adz for trueing and leveling framework in house and ship construction. They dressed planks held between their feet, using the curved blade of the adz to slice scallops or dented hollows into the surface of the timber.

Its Companion—The Drawknife

Enhancing the rustic charm of the item under construction and acting as companion to the adz is another indispensable tool, the drawknife. This is used to fashion the edges or faces of timber. Both the adz and the drawknife must be kept razor sharp.

Once you have obtained these tools, the next steps are to search out suitable raw material and, then, to transform it into whatever item of furniture you desire to make. This is where, in the eyes of carpenters, an old-fashioned, rustic style of furniture making has considerable advantages over the more conventional manufacturing techniques.

Rough-sawn timber planks, provided they are dry and not warped or bowed, can be fashioned into furniture that is both sturdy and beautiful. Such planking may be obtained from a variety of sources: discarded furniture (wardrobes, headboards, tabletops), old packing cases, beams from demolished buildings, and old fence posts.

Recycled Timber—Given a New Lease on Life

Aged timber that has not been affected by woodworm or rot can come alive with warmth and beauty in the hands of an expert.

Blemishes, nail holes, and dents can create unusual features in the recycled wood used for furniture. Left in its natural form or stained and polished, your handcrafted item will bring contentment and pleasure as something well made and long lasting.

As with the gardener who tills the soil, the potter who kneads the clay, and the spinner who spins the natural fiber, the carpenter who shapes and fashions a piece of timber using an adz or a drawknife finds it to be most rewarding. Yes, it is hard work. Yes, it is going to take far longer than modern methods. However, the realization that your labors will be a source of satisfaction to you and that your crafted furniture will bring years of usefulness to its recipient contributes to the age-old joy bound up in working with wood.

Hints as to Technique

An adz is not ideal for use on all timber. The fibers found in tropical hardwoods usually resist the stroke of the adz blade. Generally, a softer timber will respond better to the adz. Knots need not be a problem. Using a gouge (curved chisel), you can carve or hollow these out, thus creating a special feature in the surface you are preparing.

Some of the finest color is often found in planks sawed from the heart of a tree. Furniture made from these will rarely need staining. If, however, you wish to give depth and character to a plain wood, there are a wide range of stains to suit your individual preference.

Even this process does not have to be expensive. Some have rubbed automotive grease into light-colored or pale timber and have found that it wonderfully enhances the handcrafted item.

To apply the finishing touch to your creation, there is a range of polyurethanes or lacquers that may be sprayed or brushed onto the furniture. For a more natural finish that feeds the timber rather than seals it, you can work into the wood a polishing oil made from the following: five parts vinegar, four parts turpentine, two parts raw linseed oil, and one part methylated spirits. Dissolve some beeswax into your mixture, and allow it to permeate the wood for several days.

Craftsmanship That Satisfies

Solid wood furniture that has been distinctively crafted by your own hands will always have an appeal as it sits in your favorite corner of your home, however humble that may be. All over the world, in mansions and cottages, one can find many fascinating examples, sometimes dating back centuries, of the handiwork of furniture craftsmen. These are surely a testimony to the skill, diligence, and patience of such people. They derived contentment and pleasure from producing items that having been lovingly preserved, bring practical value and beauty. These add a measure of individuality to the dwellings that they adorn.

In this age, which is becoming increasingly overwhelmed with plastic and extruded resin products, our Creator's gift of the tree still serves many useful purposes. Not the least of these is the providing of raw timber that beckons the eager craftsman to transform it into beautiful wood furniture.



Handmade dresser



Corner shelf

Cruelty to Animals—Is It Wrong?

IN A Central American sports arena, all eyes are riveted on two roosters, one red, the other white. The crowd roars as the red rooster, with a razor-sharp blade strapped to its leg, delivers a blow to the white one. A referee picks up the two birds. The white one is now limp, dead, and dripping blood. The cockfight is over.

In the southern Philippines, two stallions are pitted against each other. Spectators watch the gruesome spectacle as the horses suffer bites on the ears, neck, snout, and other body parts. Although both may leave the ring alive, at least one of them may be maimed or blinded or suffer injuries that will eventually cause death.

Two dogs in Russia are attacking each other. Within a short time, eyes torn out and ears ripped up, they are moving around on mutilated legs, blood flowing from gashed flesh.

For centuries man has pitted animal against animal in the name of sport, with gambling often a driving force. Added to the

list are bullfights, fox hunts, and even spider fighting. Additionally, many animals experience suffering in the name of science. Further, countless animals suffer from the neglect of their owners, whether intentional or not.

In some lands, there are laws that regulate the treatment of animals and prohibit cruel acts. As far back as 1641, the Massachusetts Bay Colony formulated "The Body of Liberties," which stated: "No man shall exercise any Tirranny or Crueltie towards any bruise Creature which are usuallie kept for man's use." Since then, legislation has been passed and societies have been formed to guard against cruelty to animals.

Still, many who promote the fighting sports mentioned above do not view themselves as perpetrators of animal cruelty. Some claim to love the animals they brutally cause to suffer or die. Cockfight lovers claim that their birds live longer than the average chicken destined for the cooking pot—small comfort indeed!

"Bullfight in a Village," by Francisco Goya



Why Is Cruelty Wrong?

God allows us to benefit from the animals. Bible principles allow us to kill animals to provide food and clothing or to protect ourselves from harm. (Genesis 3:21; 9:3; Exodus 21:28) However, life is sacred to God. Our dominion over the animals must be exercised in a balanced way that shows respect for life. The Bible speaks negatively of a man named Nimrod, who apparently killed animals and perhaps humans for the sheer thrill of it.—Genesis 10:9.

Jesus spoke of God's concern for animals in these words: "Five sparrows sell for two coins of small value, do they not? Yet not one of them goes forgotten before God." (Luke 12:6) Also, when changing his mind about destroying a city full of practitioners of wickedness who had repented, God himself said: "Ought I not to feel sorry for Nineveh the great city, in which there exist more than one hundred and twenty thousand men . . . , besides many domestic animals?" (Jonah 4:11) Obviously, he does not regard animals as just disposable items, to be thrown away at will.

When giving the Israelites laws, God taught them proper care of animals. He required them to return a stray animal to its owner and to help animals in distress. (Exodus 23:4, 5) Animals were to benefit from a Sabbath rest, just like humans. (Exodus 23:12) There were laws governing the proper treatment of farm animals. (Deuteronomy 22:10; 25:4) Obviously, animals were to be cared for and guarded, not exploited.

Proverbs 12:10 explicitly states God's viewpoint: "The righteous one is caring for the soul of his domestic animal, but the mercies of the wicked ones are cruel." A Bible commentary renders this verse as follows: "A righteous man's kindness extends even to dumb animals, but a wicked man is

cruel, even when he thinks he is being most gentle."—*Believer's Bible Commentary*, by William MacDonald.

The righteous man treats animals with kindness and seeks to know their needs. A wicked person may vocally express love for animals, but his "mercies," at best, are actually cruel. His actions betray the selfish motive he has in mind. How true this is of those who pit one animal against another in hopes of winning money!

Relief for the Animals

True, God's original purpose was that man have "in subjection the fish of the sea and the flying creatures of the heavens and every living creature that is moving upon the earth." (Genesis 1:28) Cruelty to animals has no place in that purpose. The inhuman treatment of animals will not go on forever. We have reason to believe that God will stop all unnecessary suffering. But how?

He promises to do away with wicked and cruel people. (Proverbs 2:22) Regarding the animals, Hosea 2:18 says: "I shall certainly conclude a covenant in that day in connection with the wild beast of the field and with the flying creature of the heavens and the creeping thing of the ground." How wonderful it will be to live during that time, when peaceful conditions will benefit not only upright humans but also the animals!

IN OUR NEXT ISSUE

**Will There Ever Be
Human Rights for All?**

**Why Must I Live
Without My Parents?**

**Russian Judicial Chamber
Vindicates Jehovah's Witnesses**

WATCHING THE WORLD

"The Year the World Caught Fire"

Jean-Paul Jeanrenaud, head of the World Wide Fund for Nature International's forest program, claims that "1997 will be remembered as the year the world caught fire." Serious fires burned in every continent except Antarctica. For example, valuable woodlands in Indonesia and Brazil, equal to the land area of Switzerland, were consumed. Causes range from deliberate land clearing for agricultural purposes to drought, which is thought to be the result of weather extremes caused by El Niño. The resulting high levels of carbon dioxide from burning fossil fuels add to air pollution and increase the danger of global warming, reports London's newspaper *The Independent*. Mr. Jeanrenaud warns: "We are creating a vicious cycle of destruction, where increased fires are both a result of changes in weather and a contributory factor to these changes."

More Calcium Needed

"Because of their bone growth, young people have an increased need of calcium," warns the German newsletter *Gesundheit in Wort und Bild* (Health in Word and Picture). The recommended daily intake is 1,200 milligrams, but only 56 percent of the young women and 75 percent of the young men in Germany between 15 and 19 years of age reach that level. "Throughout Europe the calcium supply for young girls is inadequate," says Mary Fraser, of the European Foundation for Osteoporosis. Though remaining un-

noticed for a long time, such deficiency may lay the foundation for osteoporosis in later life. "Calcium-rich food items are cheese, milk, yogurt, sesame seeds, amaranth seeds, soybeans, green vegetables, nuts, and fish," the article says.

The Dominating Dollar

"Few Americans may realize it, but more U.S. currency is in circulation outside the United States than inside," says *U.S. News & World Report*. "Of the \$450 billion in bills and coins now lining people's wallets, cash registers, bank vaults, and mattresses, about two thirds—or \$300 billion—is abroad." And that amount has been growing by \$15 billion to \$20 billion a year. While cash



in the United States circulates mainly in \$20 bills, most of the cash abroad is in the form of \$100 bills, indicating that the money is used, not for small daily purchases, but for savings and for commercial transactions. This is true especially in lands where there is much inflation and people do not trust the banks. About 60 percent of the new \$100 bills that were printed last year were shipped directly overseas. From the U.S. standpoint, the

large amount of money circulating abroad is comparable to giving the U.S. government an interest-free loan that does not have to be redeemed for goods or services, saving the government billions of dollars.

License to Loot

"Brazil's Roman Catholic leaders have spoken out for the poor and starving, and defended those who have stolen food to survive," reports the *ENI Bulletin*. Because of a severe drought in Brazil's northeast, lootings of supermarkets and warehouses have been approved. According to the archbishop of Belo Horizonte, cardinal Serafim Fernandes de Araujo, "the church does not condemn anybody who takes food, wherever they find it, to avoid starvation." And cardinal Paulo Evaristo Arns is quoted as saying: "We are going to fight against this neo-liberalism which concentrates wealth in the hands of a few privileged people while the poor become ever poorer." He added: "It is time for the people in the cities and the countryside to wake up."

Debt Load

"The average [Canadian] spends \$1,236 on gifts, entertainment and travel during the holiday season," reports *The Vancouver Sun* newspaper, and "much of that spending will end up on a credit card." There is tremendous emotional pressure to spend money during Christmastime, say financial counselors, and when pocket money is lacking, it is easy to

keep spending by using credit cards. One adviser believes that job security seems to give consumers "confidence to take on even more debt instead of paying their way out." By the end of 1997, Canadians held a record \$20.42 billion in unpaid credit-card balances—double the 1991 figure. Experts estimate that it takes the average shopper six months to pay off holiday bills and that many will still be carrying some of the debt as they start another "spending binge" the following Christmas season.

Trivializing Death

"It is parents and teachers who should minimize the heroism encouraged by movies and TV in order not to trivialize death," explains the *Jornal do Brasil*. A study in Rio de Janeiro shows that children under 13 years of age commit 10 percent of the crimes. "These are children who carry guns, attack, maim, or kill schoolmates, and are guilty of sexual abuse against those who are younger," the article states. Says psychiatrist Alfredo Castro Neto: "A culture such as we have now, which encourages competition and shows in films that one can kill to get what one wants, can only increase the mental confusion of these children." Recommending educational toys rather than guns, educator Josefa Pech says that it is essential to show the child that this "image of a hero who kills everybody is foolish and unreal and that weapons are not status or power symbols but, rather, objects that kill people."

Deadly Record

"Smoking kills more Americans each year than died in bat-

tle during World War II and the Vietnam War put together," states the *University of California Berkeley Wellness Letter*. "Every day more than 1,200 Americans die from smoking-related causes, the equivalent of three or four fully loaded jumbo jets crashing with no survivors."

Lemming Myth Disproved

Do lemmings—small rodents living in cold northern regions—commit suicide by mass drowning? Many people still believe this. Scientists have long maintained a skeptical attitude, however, and now



a British Broadcasting Corporation Wildlife on One team, filming for six months in the west Canadian Arctic, has disproved the myth. As long as their food supply lasts, lemmings flourish with overcrowding. How, then, did the story of their mass suicide arise? Norwegian lemmings had been seen falling accidentally into water when migrating down mountains to lusher pastures, reports *The Guardian* newspaper of London.

Robbing Patients

Germany's hospitals are being plagued by thieves. "Three hundred thefts a year are reported by the university hospitals in Cologne," reports the newspaper *Emsdettener Ta-*

geblatt. "A bunch of flowers in the hand, a charming smile on the lips—and for the thief in a hospital, the booty is as good as certain." Disguised as patients' visitors, their domain extends from bedside tables to coat-racks. Older patients in particular make work easy for the thieves. For instance, one elderly man was found keeping several thousand deutsche marks under the pillow of his hospital bed. Unrestricted visiting times allow the thieves great freedom, and more or less anyone can enter a hospital without being stopped. Therefore, patients are warned to lock away money and valuables in a hospital safe or elsewhere or to give them to someone for safe-keeping.

Ear Prints

When a burglar was convicted recently in London, it was his ear that gave him away. How? Although he was very careful never to leave a fingerprint at the scene of a crime, he had the habit of putting his ear to a window or a keyhole to check if anybody was at home before breaking in, thus leaving behind his ear prints. "Ear prints are as unique as fingerprints," says Professor Peter Vanes, forensic pathologist at Scotland's Glasgow University. Unlike fingerprints, though, ears continue to grow throughout adult life, as do hair and nails, reports *The Daily Telegraph* of London. However, the police know that our ears, whatever their size, are unique, as were this burglar's. He was the first to be convicted in Britain on the evidence of an ear print, and he admitted to five counts of burglary.

FROM OUR READERS

Information Anxiety I read the series "Information Anxiety—How Does It Affect You?" (January 8, 1998) You state that the glut of information may in part be due to the proliferation of news and magazines. I feel that your magazine may be contributing to this glut. Is this not a case of the pot calling the kettle black?

J. K., United States

Our series exposed the glut of "useless" information. "Awake!" certainly has not contributed to this, as its stated purpose is to 'probe beneath the surface and point to the real meaning behind current events.' Such information can hardly be called useless.—ED.

Mary and the Resurrected Christ I am writing to complain about an article in "Watching the World," namely, "Mary First to See the Risen Christ?" (January 8, 1998) You demonstrate your ignorance of Scripture, which also suggests a lack of interest in truth. There are many things that occurred and were said that are not included in the Bible. Read John 21:25.

J. G., United States

Our article merely reported what was stated in the official Vatican newspaper "L'Osservatore Romano." Pope John Paul II was quoted therein as claiming that Mary "was probably the first person to whom the risen Jesus appeared." While we respect the right of our readers to believe as they wish, there is simply no Biblical evidence for such an assertion.—ED.

Troubadours The article "The Troubadours—More Than Singers of Love Songs" (February 8, 1998) was a skillful analysis of the role these singer-poets played in medieval society. As a literature teacher, I have studied the Portuguese troubadours, and your article helped

me to see this artistic movement in its whole context. Articles of this quality give credibility to your magazine.

R. N. A., Brazil

I have to admit that it took effort to start reading this article, but once I began, it immediately caught my interest. In particular, I was glad to learn who probably introduced the custom of "ladies-first." Japan does not have the "ladies-first" custom, but my husband, who was brought up as one of Jehovah's Witnesses from the time he was young, has unfailingly followed the custom ever since we got engaged. (We are now in our fifth year of marriage.) I am very happy.

Y. N., Japan

Crossword Puzzles I want to thank you with all my heart for the crossword puzzles. They encourage you to get out your Bible and find solutions in an easy and intelligent way.

N. C., Italy

Mother and Child Reunion I was deeply moved by the article "A Unique Reconciliation." (February 22, 1998) For me, knowing my roots made a big difference emotionally. My mother and father never married each other. I often wondered about my father, but I got only brief answers to my questions. Not long ago I asked my mother what my father's full name was. Using a telephone directory, I was able to locate his sister, and to my surprise, I learned that she is one of Jehovah's Witnesses! She explained that my father passed away in 1980, never having married. Even so, my mother and my aunt have been a real comfort in my time of need. Your articles have also become a part of my healing process.

L. D., United States

Delinquent Teens—The Causes?

relief. It's also good to treat your teen as a child again.

DO YOU hold to the conventional opinion that juvenile delinquents typically come from poor families and that children from "good" families rarely turn to crime? In Asia the facts seemed to some to support that view. "No longer," reports *Asia Magazine*. "Police statistics and case stories around Asia show that more and more teenagers from respectable homes steal, vandalise, take drugs and turn to prostitution."

For example, in Japan half of all teenagers charged with a felony come from a middle-class background. The situation in Bangkok is similar. "In the past," says Adisai Ahapanun, chief of Muhibita

Training School, "teenage crime was mostly motivated by lack of money. Today, more than 50 per cent of the teenagers here are from middle-income homes with no financial difficulties."

Some blame the situation on working mothers, rising divorce rates, and a materialistic outlook on life. Says Eddie Jacob, assistant director of a halfway house for teens

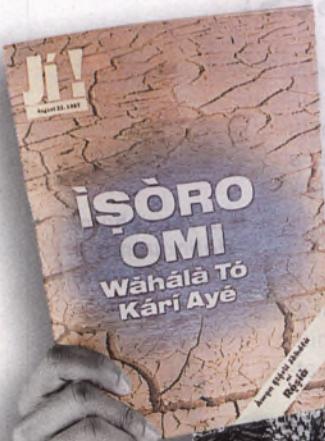
in Singapore: "The bottom line is dysfunctional homes—where the parents may be divorced, or where you have single parents, or where both parents are working and the kids become neglected. Children pick up their values from home."

The Bible foretold that our times would be marked by increasing rebellion among youth. (2 Timothy 3:1, 2) Yet, that same book can give families the values that they need to stay close, regardless of their economic situation. The Bible is worth investigating, for "all Scripture is inspired of God and beneficial for teaching, for reproving, for setting things straight, for disciplining in righteousness." (2 Timothy 3:16) Jehovah's Witnesses in Asia—indeed, all over the world—are finding rewards in studying the Bible as families. They would be happy to help you do the same.

***It is your choice
—delinquency or
God's approval***



"Awake! Is the Perfect Material"



The above was the comment of a 16-year-old Muslim male from Benin City, in the African country of Nigeria. He explained in a letter to the Nigeria branch office of Jehovah's Witnesses:

"I came across Awake! in a friend's house and borrowed nine issues. I read all of them from cover to cover in one day! I am writing to praise all the brains behind Awake!—including Jehovah—for a work well done! I am particularly impressed by the way you connect environmental matters with the Bible and God. As a member of the Nigerian Conservation Foundation, I have been looking for materials to build my own environmental/nature library. I now realize that Awake! is the perfect material. Please let me know how I can get the two editions of Awake! each month directly from you."

Globe: Courtesy of Repligie Globes, Inc.