

# Awake!

September 22, 2000

Will  
Science  
Create a  
**Perfect  
Society?**



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## Will Science Create a Perfect Society? **3-11**

Will advancements in the field of biotechnology lead to a world free of pain, sickness, and disability?



### Why Am I So Thin? **12**

Some youths feel unattractive because they are thin. Consider some practical suggestions that can help youths to cope.



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Step into the cockpit, and see how flight crews are trained.

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# Tomorrow's Children?

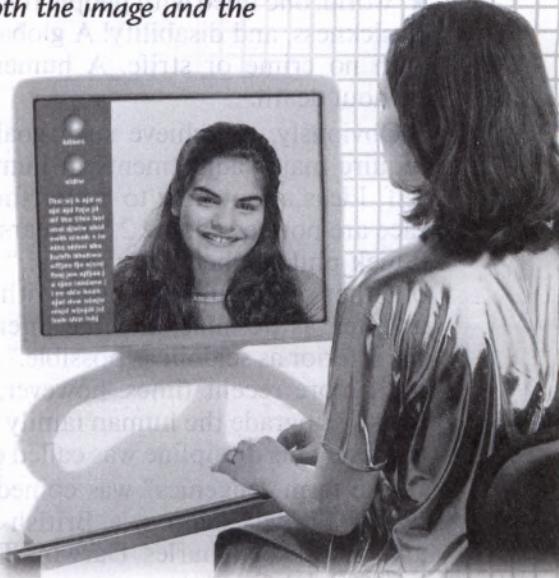
The year is 2050. Inside the fertility clinic, Melissa peers at a computer screen. She is thoughtful. After all, choosing a child is a serious matter, not something to be done in haste. The screen shows the image of a smiling teenage girl whom Melissa and her husband, Curtis, have already named Alice. Both the image and the information printed beside it tell a great deal about the person Alice will become, both physically and mentally.

Alice has not been born. The future teenager is yet an embryo, safely stored at -320 degrees Fahrenheit with dozens of other embryos in a nearby room. The genetic characteristics of each embryo were scanned and fed into the computer to help the parents select which one would be implanted in Melissa's womb.

Since Melissa and Curtis want a girl, the male embryos are rejected. The parents next examine the remaining embryos for such characteristics as health prospects, appearance, and temperament. Finally Melissa and Curtis make their choice. Nine months later they rejoice in the birth of the daughter of their choosing—a real, living Alice.

**T**HIS story is condensed from an account written by Lee Silver, a professor of molecular biology at Princeton University, New Jersey, U.S.A. It is a projection of what he believes may occur in the decades ahead. He based his ideas on existing research and technology. Already, human embryos can be screened for certain genetic disorders. And it has been over 20 years since the first test-tube baby was born. Having been conceived in a petri dish, she was the first human conceived outside her mother's womb.

The fact that Dr. Silver names the child



Alice may remind us of the well-known fantasy *Alice in Wonderland*. Indeed, the future to which many are looking is a land of wonders. An editorial in the prestigious magazine *Nature* stated: "The growing power of molecular genetics confronts us with future prospects of being able to change the nature of our species."

In the following article, we will look at some developments in biotechnology, focusing particularly on the prospects for "improving" humanity. Will the work being done in the laboratories today affect your life or that of your children? Many believe that it will.

# The Quest for a Perfect Society

**I**T WOULD be wonderful to see a better world, one filled with people free of pain, sickness, and disability! A global society with no crime or strife. A human family without death.

Obviously, to achieve such goals would require major adjustments in humanity itself. Ideas about how to better the human race are not new. Some 2,300 years ago, the Greek philosopher Plato wrote: "The best of either sex should be united with the best as often as possible, and the inferior with the inferior as seldom as possible." It wasn't until more recent times, however, that efforts to upgrade the human family began in earnest. This discipline was called eugenics.

The term "eugenics" was coined in 1883 by Sir Francis Galton, a British scientist and cousin of Charles Darwin. The word comes from Greek terms meaning "good in birth" or "noble in heredity." Galton knew that various flowers and animals could acquire certain desirable qualities through selective breeding. Might not humanity be improved by similar methods? Galton believed that it could. He reasoned that if a fraction

of the cost and effort devoted to the breeding of horses and cattle were spent on "the improvement of the human race," the result would be "a galaxy of genius."

Influenced by the writings of Darwin, Galton reasoned that it was time for humans to take control of their own evolution. During the early decades of the 20th century, Galton's ideas became extremely popular among politicians, scientists, and academics, in both Europe and the United States. Reflecting the popular notions of his day, the leader of a powerful nation wrote: "Society has no business to permit degenerates to reproduce their kind. . . . Any group of farmers who permitted their best stock not to breed, and let all the increase come from the worst stock, would be treated as fit inmates for an asylum. . . . Some day we will realize that the prime duty of the good citizen of the right type is to leave his blood behind him in the world, and that we have no business to perpetuate citizens of the wrong type." Those words were written by the 26th president of the United States, Theodore Roosevelt.

**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.

Unless otherwise indicated, *New World Translation of the Holy Scriptures—With References* is used.

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In fairs and expositions in both Britain and America, the laws of genetic inheritance were depicted, often on a vertical board displaying an array of stuffed guinea pigs. They were arranged to show the inheritance of fur color from one generation to the next generation. The point of the exhibits was made clear by accompanying text. One chart stated: "Unfit human traits such as feeble-mindedness, epilepsy, criminality, insanity, alcoholism, pauperism and many others run in families and are inherited in exactly the same way as color in guinea pigs." Another exhibit placard asked: "How long are we Americans to be so careful for the pedigree of our pigs and chickens and cattle—and then leave the *ancestry of our children* to chance?"

### Eugenics in Action

These ideas were not merely intellectual exercises. Tens of thousands of "undesirables" were sterilized in both North America and Europe. Of course, the definition of who or what was undesirable depended largely on the views of those making the decisions to force sterilization. In the state of Missouri, U.S.A., for example, legislation was proposed that called for the sterilization of those "convicted of murder, rape, highway robbery, chicken stealing, bombing, or theft of automobiles." In its misguided effort to achieve a master race in one generation, Nazi Germany went a step further. After the forced sterilization of up to 225,

## After the forced sterilization of up to 225,000 people in Nazi Germany, millions of other "undesirables" were exterminated under the guise of eugenics

000 people, millions of others—Jews, Romanies (Gypsies), the disabled, and other "undesirables"—were exterminated under the guise of eugenics.

Because of the barbarism of the Nazi era, eugenics took on an ugly connotation, and many hoped that this field of study had been laid to rest, buried with the millions who died in its name. In the 1970's, however, reports circulated of scientific advances in the fledgling field of molecular biology. Some feared that these advances might fuel a return to the ideas that had seduced Europe and North America earlier in the century. For example, in 1977 a prominent biologist warned his colleagues at a National Academy of Science forum on recombinant DNA:

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"This research is going to bring us one more step closer to genetic engineering of people. That's where they figure out how to have us produce children with ideal characteristics. . . . The last time around the ideal children had blond hair, blue eyes and Aryan genes."

Many today would consider it ludicrous to compare the advances in genetic engineering with Hitler's eugenic program. Sixty years ago, there were harsh demands for racial purity. Today people talk about improving health and the quality of life. The old eugenics was rooted in politics and fueled by bigotry and hatred. The new advances in genetic research are fueled by commercial interests and consumer desires for better health. But while there are major differences, the goal of shaping people to our own genetic prejudices may sound much like the old eugenics.

#### **Transforming Society Through Science**

Even as you read these words, powerful computers are systematically mapping the human genome—the complete set of instructions contained in our genes that direct how we grow and that define much of what we are. These computers are carefully cataloging the tens of thousands of genes contained in human DNA. (See the box "DNA Detectives.") Scientists predict that once the information is collected and stored, it will be used far into the future as a primary source for understanding human biology and medicine. And scientists hope that as the mysteries of the human genome are deciphered, the way will be opened to therapy that will fix or replace defective genes.

Doctors hope that genetic research will result in a new generation of safe yet powerful drugs for preventing and fighting disease. Such technology may also make it possible for your doctor to check your genetic

## **Doctors hope that genetic research will result in a new generation of safe yet powerful drugs for preventing and fighting disease**

profile to determine in advance which drug would work best for you.

Besides such medical advantages, some see genetic engineering as a way to solve social problems. Between the second world war and the early 1990's, academics argued that social problems could be reduced by reforming economies and institutions and improving the environment in which people live. In more recent years, though, social problems have deepened. Many people have come to believe that the key to such problems lies at the genetic level. And some now believe that genes play a more important role than environment in influencing individual and group behavior.

What about death? According to researchers, even the solution to that problem lies in tweaking our DNA. Already scientists have doubled the life span of fruit flies and worms, using techniques that they claim might someday be applied to humans. The head of Human Genome Sciences Inc. said: "This is the first time that we can conceive of human immortality."

#### **Designer Babies?**

The glowing reports of what is being done and what may be done in the years ahead make it easy to overlook the present

## Can Humans Be Cloned?

In 1997 a sheep named Dolly made headlines around the world. What was special about Dolly? She was the first mammal successfully cloned from an adult cell, taken from a ewe's mammary gland. Thus Dolly became a younger "twin" to the sheep from which the cell was taken. Before Dolly, scientists had for decades cloned animals from embryonic cells. Few thought that it was possible to reprogram a cell from an adult mammal to generate another animal in its exact genetic image. Cloning from an adult cell makes it possible to see in advance what the offspring will be like.

The aim of the scientists who cloned Dolly was to improve farm animals as a valuable source for

producing pharmaceuticals secreted in their milk. The report of the scientists' success first appeared in February 1997, in the scientific magazine *Nature*, under the title "Viable Offspring Derived From Fetal and Adult Mammalian Cells." The media quickly seized on the report and its implications. Two weeks later the cover of *Time* magazine featured a photograph of Dolly along with the headline "Will There Ever Be Another You?" That same week, *Newsweek* magazine ran a cover series entitled "Can We Clone Humans?"

Since Dolly, scientists have cloned dozens of individual animals—all from adult cells. Can the same technology be used to clone adult humans? Yes, say

some biologists. Has it been done? Not yet. Ian Wilmut, the British scientist who led the team that cloned Dolly, points out that cloning is presently "a very inefficient procedure," producing a death rate among fetuses that is about ten times higher than in natural reproduction.

Some wonder, 'What if someone were to perfect the technique and cloned, say, multiple Hitlers?' In an effort to allay such fears, Wilmut points out that while a cloned child would be a genetically identical twin of the person from whom it was cloned, a cloned human would be influenced by its environment and would develop a distinct personality just as natural twins do.



limitations and the potential problems of the new technologies. To illustrate, let us return to the subject of babies. Genetic screening is already a common practice. The most widely used method dates back to the 1960's. A doctor injects a needle into the womb of a pregnant woman and extracts a sample of amniotic fluid, which surrounds the fetus. The fluid can then be tested to see if the fetus has any of the dozens of genetic disorders, including Down's syndrome and spina bifida. This procedure is usually per-

formed after the 16th week of pregnancy. A more recent procedure reveals details of the embryo's genetic makeup between the sixth and tenth weeks of pregnancy.

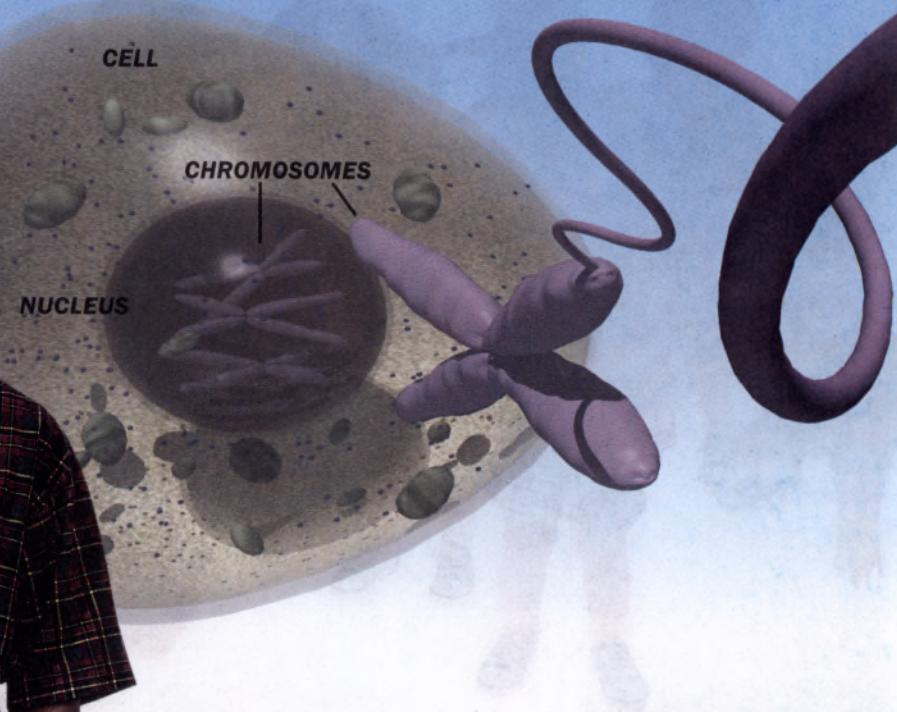
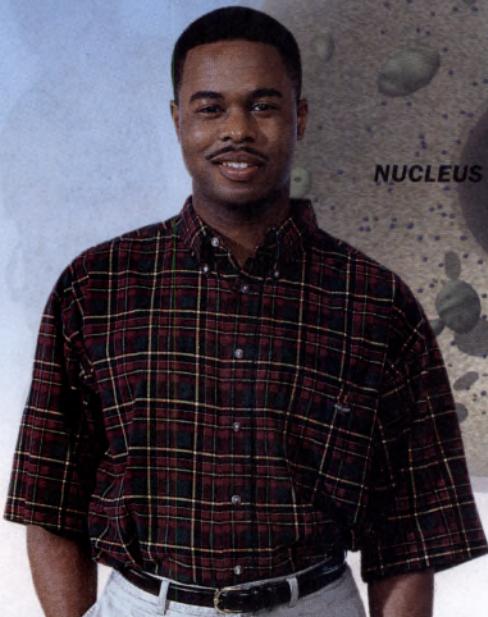
These procedures enable doctors to identify many disorders, but only about 15 percent of them can be corrected. When tests reveal a genetic problem or give an ambiguous result, many parents are faced with an agonizing decision—should the fetus be aborted, or should the child be brought to birth? *The UNESCO Courier* comments:

## DNA Detectives

The human body is made up of about 100 trillion cells. Most cells have a nucleus. Inside each nucleus are 46 packets called chromosomes. Each chromosome contains a single, tightly coiled, threadlike molecule called DNA. It is estimated that within the DNA there are up to 100,000 genes, positioned something

like towns and cities along a major highway. Our genes largely determine every characteristic in our body—our development in the womb, our gender and physical characteristics, and our growth to adulthood. Scientists also believe that our DNA includes a "clock" that determines how long we will live.

The DNA of animals and humans is remarkably similar. For example, the genetic makeup of chimpanzees differs from that of humans by only 1 percent. Still, that gap is ten times wider than the differences between the DNA of any two humans. Nevertheless, it is those infinitesimal differences that account for the many



"Despite the proliferation of DNA tests—each patented and profit-yielding—genetics has so far failed to fulfill its vaunted promises of gene therapy. Doctors are screening for conditions and disorders which they cannot treat. So abortion is often presented as treatment."

Of course, as biotechnology becomes more effective, doctors expect to have far greater powers to detect and correct the genetic defects that either cause or predispose humans to various diseases. In addition,

scientists hope that eventually they will be able to transfer artificial chromosomes into a human embryo to offer protection against such diseases as Parkinson's, AIDS, diabetes, and prostate and breast cancer. A child would thus be born with a strengthened immune system. There is also the prospect of future drugs that will "enhance" the developing embryo, perhaps by manipulating genes to boost intelligence or improve memory.

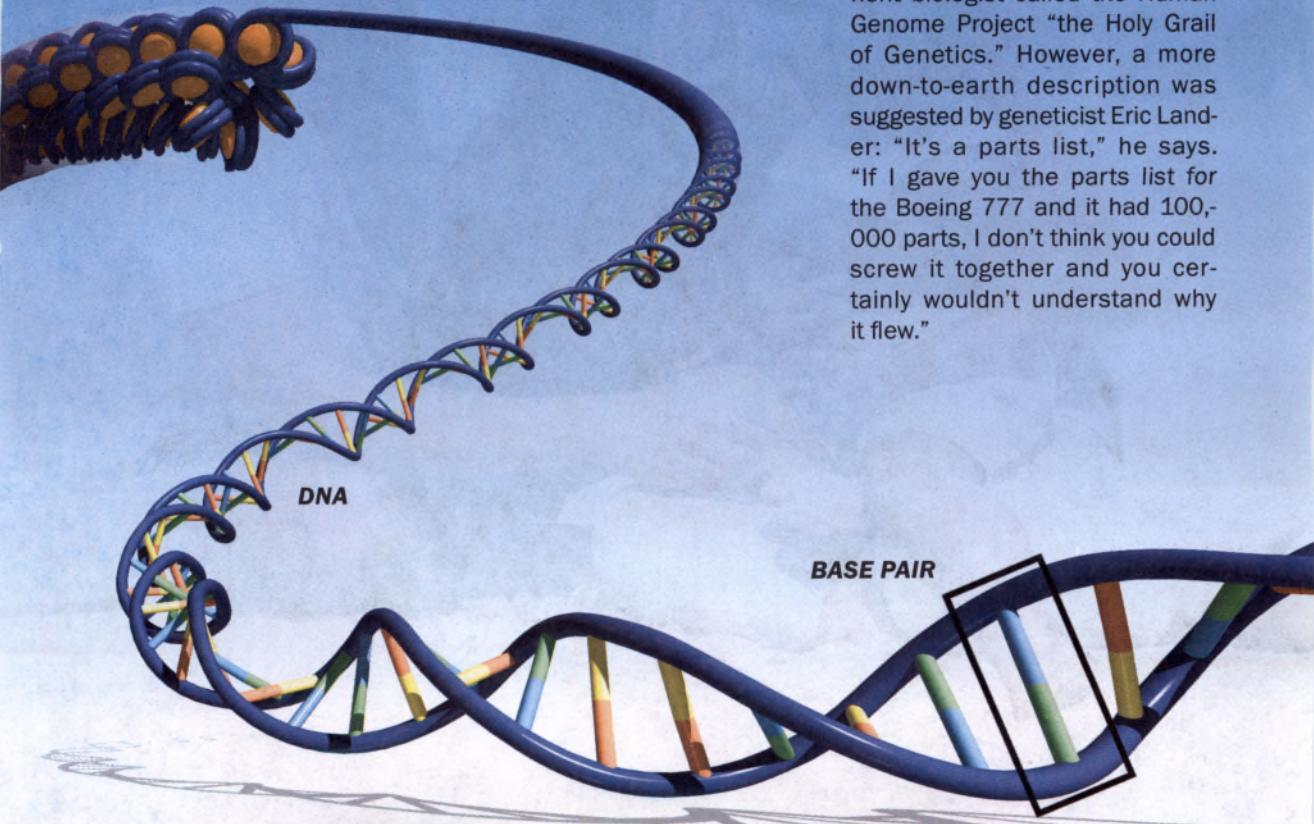
Though even the most optimistic

features that make each of us a unique individual.

A little less than ten years ago, scientists undertook a complex task—to determine the precise order of chemical units in human DNA. This task, known as the Human Genome Project, is ambi-

tious and enormous, and it will cost billions of dollars. The data collected will be enough to fill an estimated 200 volumes, with each volume the size of a 1,000-page telephone book. To read all this information, a person would have to be at it 24 hours a day for 26 years!

Often overlooked in the media is the fact that once this information is accumulated, it will still have to be interpreted. New tools will be needed to analyze the data. It is one thing to identify genes; it is quite another to know what they do and how they interact to build a human. One eminent biologist called the Human Genome Project "the Holy Grail of Genetics." However, a more down-to-earth description was suggested by geneticist Eric Lander: "It's a parts list," he says. "If I gave you the parts list for the Boeing 777 and it had 100,000 parts, I don't think you could screw it together and you certainly wouldn't understand why it flew."



scientists realize that it will be a long time before parents may be able to choose the kind of child they want from a catalog, to many people the prospect of bearing the child of one's dreams is immensely appealing. Some argue that it would be irresponsible not to use technology to eliminate genetic disorders. After all, they reason, if there is nothing wrong with sending your child to the best schools and the best doctors, why not try to have the best baby possible?

### Concerns About the Future

Others, however, voice concerns. For example, the book *The Biotech Century* states: "If diabetes, sickle-cell anemia, and cancer are to be prevented by altering the genetic makeup of individuals, why not proceed to other less serious 'disorders': myopia, color blindness, dyslexia, obesity, left-handedness? Indeed, what is to preclude a society from deciding that a certain skin color is a disorder?"



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humans?**

Genetic information will be eagerly sought by insurance companies. What if a prenatal test reveals a potential problem? Will insurance companies pressure the mother to have an abortion? If she refuses, can they deny coverage?

Chemical, pharmaceutical, and biotech companies compete to patent genes and organisms as well as ways to manipulate them. The driving impulse, of course, is financial—to make money from the technology of the future. Many bioethicists fear that this could lead to “consumer eugenics,” in which parents could be pressured to select “genetically approved” children. It’s easy to imagine how advertising could play a major role in such a trend.

Of course, the new technologies are unlikely to be readily available in the poorer parts of the world. Already many parts of the earth lack the most basic health care. Even within highly developed nations, gene-based therapy may become an option open only to the wealthy.

#### **A Perfect Society**

In the avalanche of literature about what is being done in the field of biotechnology, the expression “playing God” appears frequently. Since God is the Designer and Creator of life, it is fitting to consider what he has in mind respecting the quest for perfection. The Bible book of Genesis says that after creating life on earth, “God saw everything he had made and, look! it was very good.” (Genesis 1:31) The first human couple were genetically perfect. It was because they rebelled against God that they brought imperfection and death upon themselves and their offspring.—Genesis 3:6, 16-19; Romans 5:12.

Jehovah God wants to see an end to sickness, suffering, and death. Long ago, he made provision to rescue humanity from these problems. The Bible book of Revelation foretells a time when God will intervene in human affairs. Of that time, we read: “[God] will wipe out every tear from their eyes, and death will be no more, neither will mourning nor outcry nor pain be anymore. The former things have passed away.” These sweeping changes will not come as a result of the scientific breakthroughs of humans, many of whom do not even admit the existence of God, much less praise him. No, the passage continues: “The One [Jehovah God] seated on the throne said: ‘Look! I am making all things new.’”—Revelation 21:4, 5.

#### **IN OUR NEXT ISSUE**

**The Universe—Did It  
Come About by Chance?**

**“Extreme Sports”  
—Should You Take the Risk?**

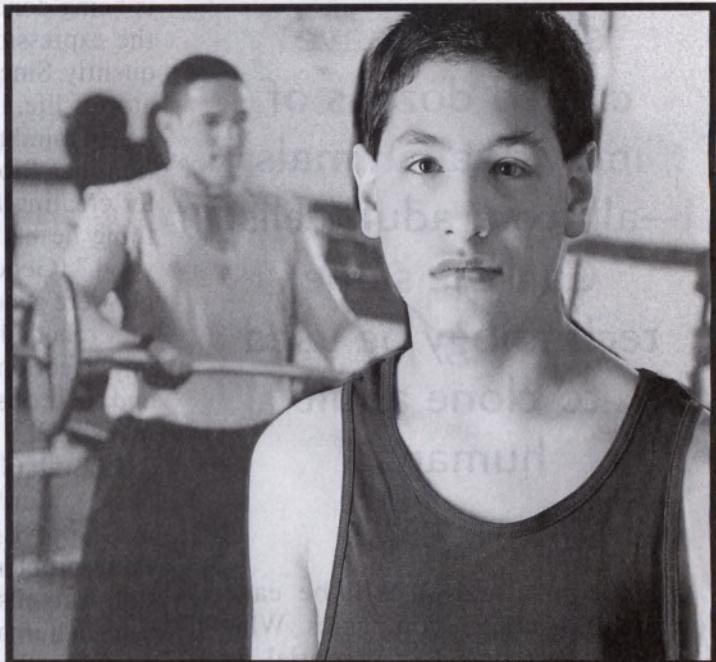
**Is It Wise to Invest  
in the Stock Market?**

## YOUNG PEOPLE ASK . . .

JUSTIN is trim and fit but not altogether happy with his body. "I'm trying to put on some weight," he admits. His current diet therefore consists of five meals a day, amounting to 4,000 calories. However, he wants the added weight to be solid muscle. So he adds: "A buddy of mine and I get up early and go to the gym together some days before work to lift weights."

Vanessa is also on the thin side. But she is quite content with her weight. "When I was younger, kids used to tease me and call me bean pole," Vanessa recalls. "But I don't worry about it anymore. I just accept myself the way I am."

'Accept yourself the way you are.' That sounds like good advice. But it may be advice that you find hard to apply. As a teenager, you may be in "the bloom of youth." (1 Corinthians 7:36) Particularly tumultuous is that period of rapid physical change known as puberty. During puberty, parts of your body may grow at different rates; your arms, legs, and facial features may seem hopelessly out of proportion.\* This can leave you feeling awkward and unattractive. Then there is the fact that not all youths develop at the same speed. So while some of your peers may have developed a muscular



### Why Am I So Thin?

physical or a womanly figure, you may still seem thin in comparison.

Although much has been said about youths who feel that they are overweight, often overlooked are youths who feel that they are too thin. This may particularly be the case among certain ethnic groups and in some countries where thinness is not considered a sign of beauty. In such regions a thin girl may suffer cruel teasing for being "skinny."

What about boys? According to researcher Susan Bordo, "studies on body image that had been done in the decades prior to the '80s had suggested that when women look[ed] in the mirror, they saw nothing but flaws." And men? Continues Bordo:

\* See the "Young People Ask . . ." articles "Am I Developing Normally?" in the September 22, 1993, issue of *Awake!*

"Men looked in the mirror and saw either an OK image or actually an even better one than what was warranted." But in recent years, that has begun to change. Noting that men make up over a quarter of cosmetic surgery patients, Bordo associates the current upswing of young men's interest in fitness with the "perfect" male bodies shown on underwear ads in the United States and other Western countries. Naturally, this has impacted teenage boys. They may feel inadequate if they do not have the muscular physique of male models.

So if you are thin, you may find yourself wondering, 'What's wrong with me?' The good news is that likely nothing is wrong.

#### **Why You Are Thin**

For many youths, being thin is perfectly normal. Often it is simply a side effect of the growth spurt and the fast metabolism that come with adolescence. Usually your metabolism will settle down as you get older. However, if you are extremely thin despite a healthy diet, it would be good to see your doctor to rule out any health problems, such as diabetes, which can cause weight loss.

Steven Levenkron, a well-known expert on eating disorders, told *Awake!*: "I recall a severely underweight young woman who was referred to me with a diagnosis of anorexia, and she did look like someone with an eating disorder. But I soon realized that her problem was physical, not psychological. Her family doctor had failed to diagnose Crohn's disease, a severe intestinal disorder. That oversight could have been fatal for this girl." If you have diabetes or any other illness that causes weight loss, you are wise to follow your doctor's advice carefully.

Of course, sometimes thinness *can* be a symptom of emotional distress. In his book *Anatomy of Anorexia*, Dr. Levenkron notes the claims of some researchers that a significant number "of insulin-dependent diabet-

ics have eating disorders, ranging from compulsive overeating to bulimia to anorexia." A qualified physician can determine if such an eating disorder exists.\*

#### **Practical Suggestions**

Let's assume that you have seen your doctor and that you are thin but healthy. Now what? At Job 8:11, the Bible says: "Will a papyrus plant grow tall without a swampy place? Will a reed grow big without water?" Just as a plant thrives when it has the right environment and nourishment, so you need a balanced diet if you are to develop into a healthy adult. This is important whether you are trying to gain weight or lose it.

Don't be tempted, though, to start eating a lot of fatty foods so that you'll gain weight more quickly. When conducting a study of the training diets of bodybuilders, nutritionist Susan Kleiner observed that they consumed about 6,000 calories per day! But according to Kleiner, "the worrisome finding about this study was that they ate, on average, more than 200 grams of fat a day. That's almost as much fat as you'd find in two sticks of butter! Short-term, that's enough to make most people sick. Eaten habitually over time, such an enormous amount of fat will lead to heart disease."

According to the U.S. Department of Agriculture (USDA), the foundation of a balanced diet is made up of carbohydrates such as breads, cereals, rice, and pasta. Next in importance are vegetables and fruits. The USDA recommends that only moderate amounts of meats and dairy products be consumed.

In order to monitor just what and how much you are eating, you might try keeping a food diary. Carry a pocket notebook for

\* See the "Young People Ask . . ." articles "Why Am I Obsessed With My Weight?" and "How Can I Conquer My Obsession With Weight?," in our April 22 and May 22, 1999, issues.

a week, and write down everything you eat and when you eat it. You may be surprised to discover that you are not eating nearly as much as you think, especially if you are always on the run. As an active teenager, you may easily burn 3,000 calories or more per day! You may also find that your diet is not as balanced as it should be—with too many fast foods such as burgers and pizza and not enough fruits and vegetables.

What about expensive food supplements? They may not be necessary. Many experts believe that you can obtain all the nutrition your body needs by eating wholesome foods. Above all, avoid quick-fix solutions like anabolic steroids. Sad to say, steroid abuse is not just a problem among teenage boys. Reports *The New York Times*: "The increased usage [of steroids] among girls, which some researchers attribute in part to a kind of reverse anorexia, has caught up to levels that began to be established by boys in the 1980's." A shocking 175,000 teenage girls in

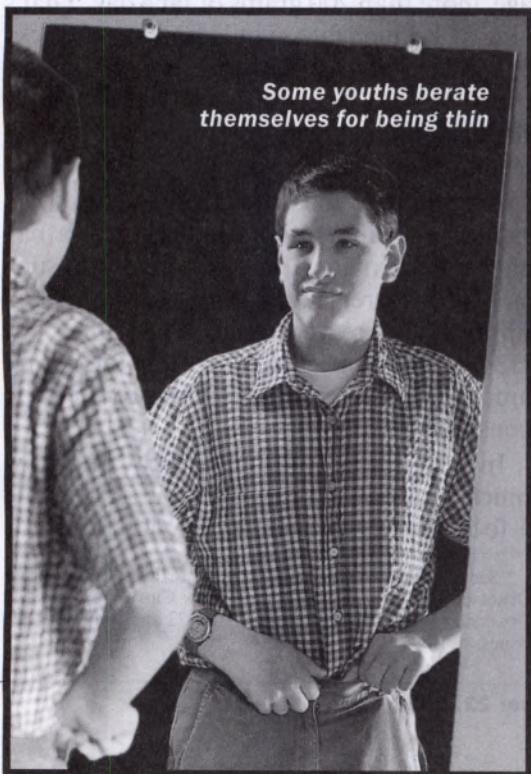
the United States admit to taking anabolic steroids. These drugs have been associated with a host of tragic side effects, including unwanted facial hair, menstrual irregularities, and breast cancer in women, prostate cancer in men, and clogged arteries and liver cancer in both women and men. Steroids should never be taken without a doctor's prescription and supervision.

### Being Modest and Realistic

The Bible tells us to be 'modest in walking with our God.' (Micah 6:8) Modesty involves an awareness of one's own limitations. Modesty will help you to be realistic about your appearance. No, there is nothing wrong with wanting to look good. But being obsessed with your appearance benefits no one—except perhaps the fashion and diet industries. Fitness experts agree that the average male simply doesn't have the right genes to be a world-class bodybuilder, no matter how well he eats or how much he trains. And if you are a girl, it may be that your body will not fill out, no matter how much you eat.

Interestingly, a little attention to your wardrobe might do a lot to offset what you may perceive as physical imperfections. Avoid outfits that unnecessarily accentuate such aspects of your figure. Some suggest wearing light colors, as dark shades tend to make thin people look thinner.

Remember, too, that far more important than your appearance is your personality. In the long run, a pleasing smile and a kindly demeanor will do more to make you attractive to others than chiseled muscles or a certain dress size. If your friends constantly put you down for the way you look, seek out people who value you for who you are inside—for what the Bible calls "the secret person of the heart." (1 Peter 3:4) Finally, never forget that "mere man sees what appears to the eyes; but as for Jehovah, he sees what the heart is."—1 Samuel 16:7.



*Some youths berate themselves for being thin*

# Giraffes

## Lofty, Long-Legged, and Elegant

BY AWAKE! CORRESPONDENT IN KENYA

**T**HE gray granite boulders felt moist and cold in the early dawn. We had nestled ourselves among these big rocks with a tin cup of hot tea in hand and our eyes fixed on the African veld below.\* Our patience was rewarded. In the soft glow of the morning light, a herd of giraffes—lofty, long-legged, and elegant—ambled across the plain. Moving as if in slow motion, they strode gracefully on stiltlike legs, their long curved necks swaying like the masts of sailing ships in the wind. We could barely breathe. The sight was so beautiful!

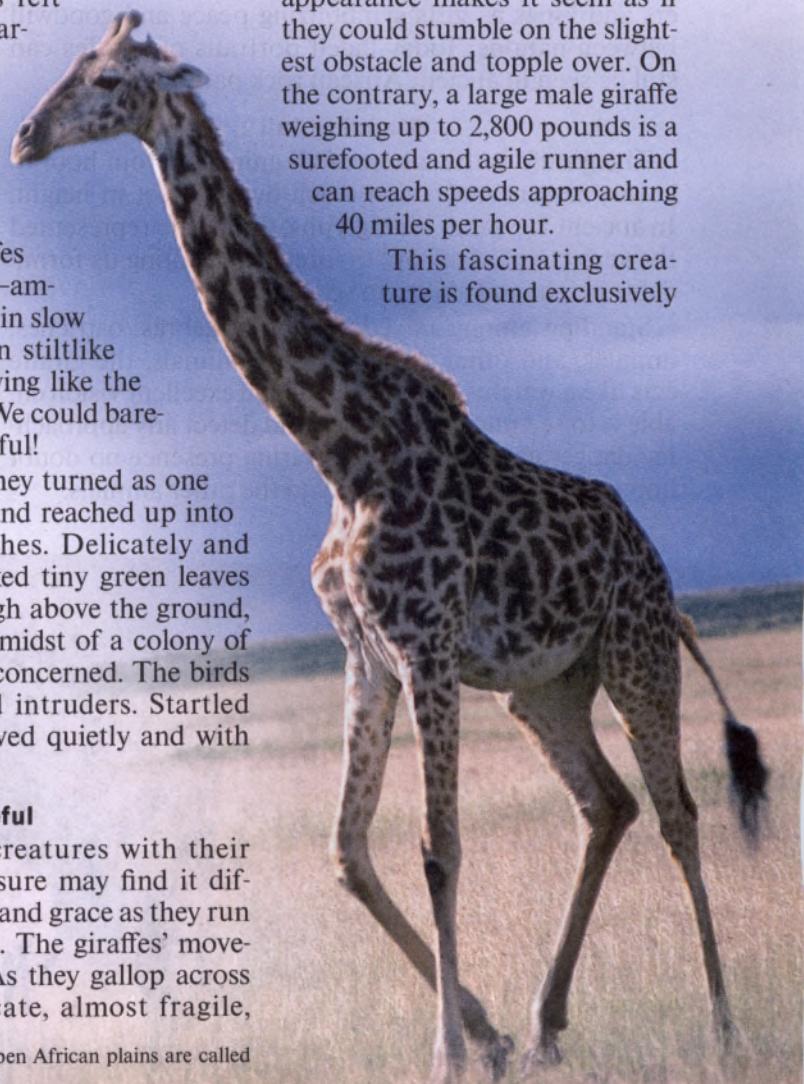
Undisturbed by our presence, they turned as one into a grove of lush acacia trees and reached up into the heights of the thorny branches. Delicately and with care, the gentle giants plucked tiny green leaves with their long tongues. There, high above the ground, they pushed their heads into the midst of a colony of weaverbird nests and browsed unconcerned. The birds roundly scolded the long-necked intruders. Startled by the noisy rebuff, the herd moved quietly and with dignity to other trees.

### Swift and Graceful

Anyone who has seen these creatures with their necks poking out of a zoo enclosure may find it difficult to visualize their true beauty and grace as they run wild and free in the African bush. The giraffes' movements are graceful and flowing. As they gallop across the open grasslands, their delicate, almost fragile,

appearance makes it seem as if they could stumble on the slightest obstacle and topple over. On the contrary, a large male giraffe weighing up to 2,800 pounds is a surefooted and agile runner and can reach speeds approaching 40 miles per hour.

This fascinating creature is found exclusively



\* The widespread small, rocky hills on the open African plains are called kopjes.

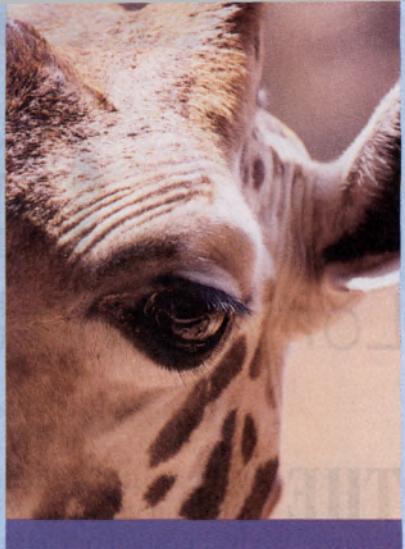
in Africa. Its gentleness and peaceful nature make it delightful to behold. The giraffe's face can be described as unique and even charming, with long, narrow ears and two small horns topped with velvety tassels of black hair. Its eyes are very large and dark, protected by long, curling eyelashes. When the giraffe gazes into the distance from its lofty vantage point, its face has the appearance of inquisitive innocence.

In ancient times the giraffe was appreciated and valued for its pleasing appearance and its shy, quiet, nonaggressive manner. Young giraffes were presented to rulers and kings as gifts symbolizing peace and goodwill between nations. Today faded portraits of giraffes can still be seen in ancient African rock paintings.

#### **Standing Tall**

The giraffe is the tallest of all animals. From hoof to horns, mature males can reach over 18 feet in height. In ancient Egyptian hieroglyphs, the giraffe represented the verb "to predict" or "to foretell," denoting its formidable height and ability to see afar.

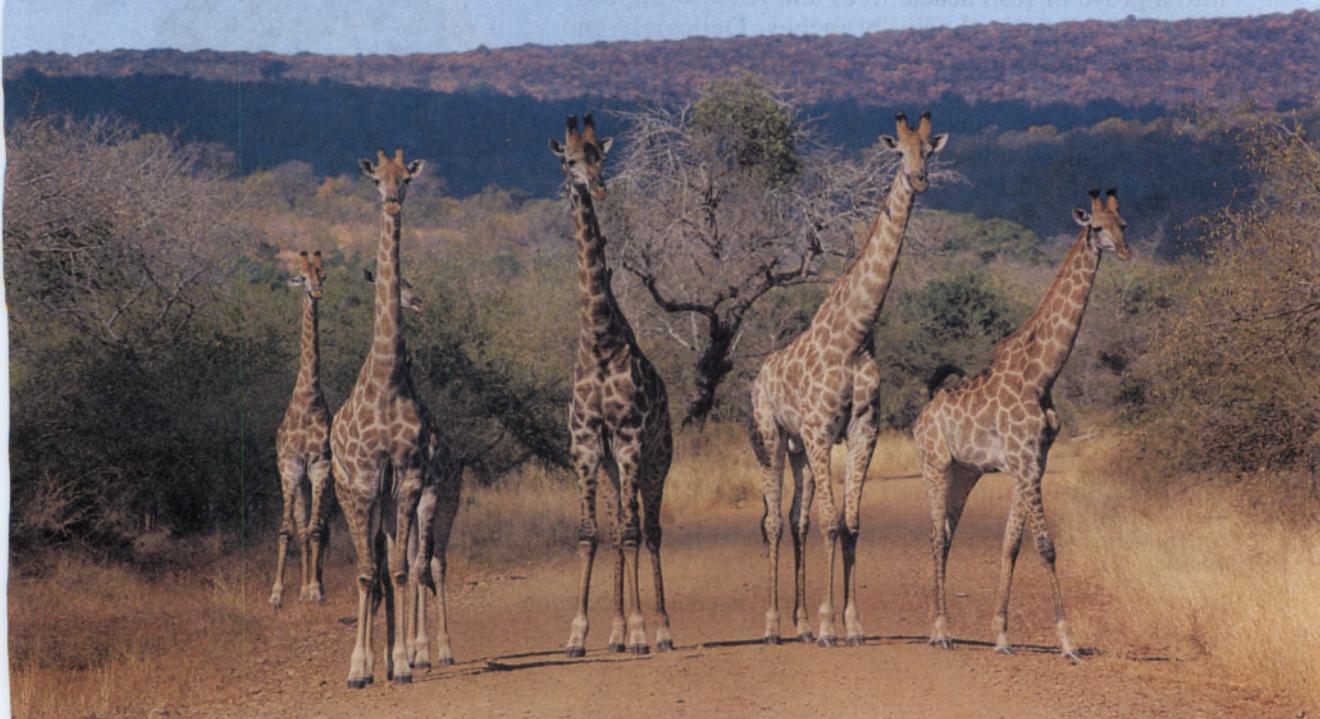
Standing among mixed groups of zebras, ostriches, impalas, and other African plains animals, the giraffe acts like a watchtower. Its height and excellent vision enable it to see into the distance and detect any approaching danger early. Thus, its towering presence no doubt imparts a measure of security to the other animals.



#### **A Marvel of Design**

The giraffe is superbly designed for browsing in the uppermost branches of tall trees, well beyond the reach of all other animals except the elephant. The unique design of the prehensile upper lip and flexible tongue enable it gently to pull the leaves off branches that are studded with barbs and needle-sharp thorns.

Giraffes may consume up to 75 pounds of vegetation a day. Al-





though they can eat many different types of greenery, they prefer the thorny acacia trees that dot the African plains. A bull giraffe can stretch its tongue out 17 inches in search of food. The giraffe's neck has extraordinary flexibility. This allows the giraffe to turn and tilt its long head at amazing angles as it maneuvers delicately through the upper boughs of the trees.

Reaching high is easy for the giraffe, but drinking water is another matter. When it approaches a water hole, the giraffe must slowly spread its front legs apart and then bend both knees in order to reach the water. In this ungainly position, the giraffe stretches its long neck to the limit before it can drink. Fortunately, the giraffe doesn't need to drink frequently, as it often derives enough moisture from the succulent leaves in its diet.

The neck and flanks of the giraffe are painted with a beautiful network of narrow white lines forming a latticework of leaflike

patterns. Colors vary from a golden tan to a rich chestnut brown and even black. As the giraffe ages, its colors darken.

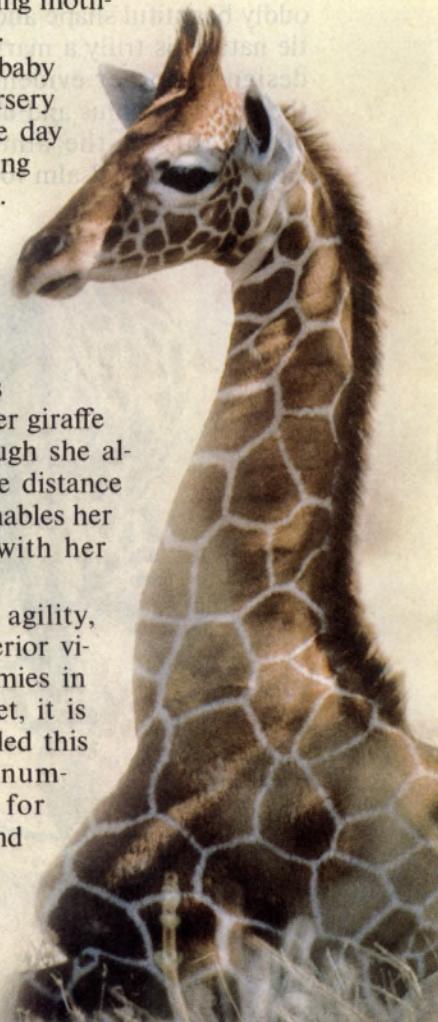
### Family Life

Giraffes are social creatures, moving in loose herds numbering from 2 to 50 animals. A pregnant female will carry her calf for a gestation period of from 420 to 468 days before giving birth to a six-foot-tall baby. At birth, the calf literally drops more than six feet to the ground, headfirst! But in 15 minutes the baby, uninjured, wobbles to its feet and is ready to nurse. After two or three weeks, the calf instinctively begins to nibble on the tender tips of acacia branches and soon gains enough strength to keep up with its mother's long strides.

A baby giraffe is a splendid miniature of its parents. Short by giraffe standards, it is taller than most men. Standing inquisitive and unafeard under the watchful eyes of its towering mother, the calf is a delightful sight.

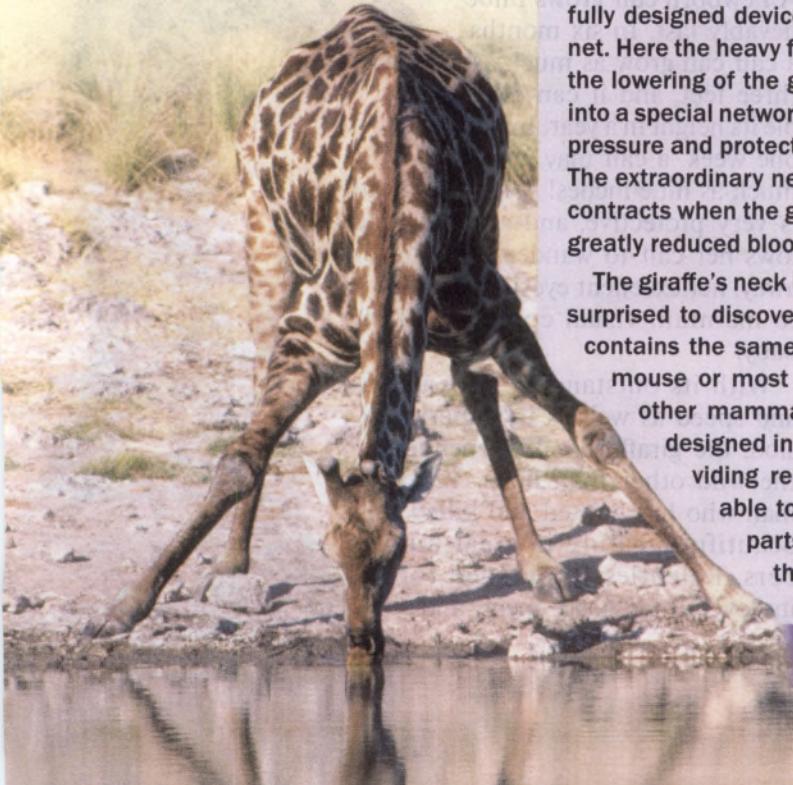
During the birthing season, baby giraffes are gathered into nursery groups, where they spend the day resting, playing, and observing what is going on around them. A newborn calf grows unbelievably fast. In six months a calf can grow as much as three feet, and it can double its height in a year. In just one week, a calf may grow as much as nine inches! A mother giraffe is very protective, and although she allows her calf to wander some distance away, her excellent eyesight enables her to maintain visual contact with her baby.

With its outstanding size, agility, and speed as well as its superior vision, the giraffe has few enemies in the wild other than lions. Yet, it is man who has hunted and killed this beautiful creature in great numbers. Relentlessly pursued for its lovely hide, tasty meat, and



long black tail hairs—which some believe possess mystic powers—this peaceful animal now faces an uncertain future. Once abundant in many parts of Africa, the giraffe is now relatively safe only within the boundaries of game parks and sanctuaries where it is protected.

Today visitors on an African safari can still thrill to the sight of long-necked giraffes running free over the vast grassy plains. There they can be seen browsing in the heights of thorny acacia trees or just staring into the distance in typical giraffe style. This splendid creature, with its oddly beautiful shape and gentle nature, is truly a marvel of design—another evidence of the creative genius and unique personality of the almighty God, Jehovah.—Psalm 104:24.



## A LONG-NECKED MIRACLE

The giraffe's odd body shape and huge size should present problems—or so one might think. With the giraffe's great height and long neck, regulating the flow of blood to all parts of its body would seem impossible. When the giraffe lowers its head to the ground, for example, the pull of gravity should cause a surge of blood to rush to the head, flooding the brain. As the giraffe raises its head, its blood should rush back down to the heart, causing the animal to lose consciousness. However, this does not happen. Why not?

The giraffe's circulatory system is truly a miracle of design, ingeniously custom-made to serve the animal's unique shape and body size. The heart itself is exceptionally large and must pump hard to send blood to the brain, situated as much as 10 to 12 feet above it. Beating up to 170 times per minute, the three-inch-thick walls of the muscular heart produce a systolic pressure that is almost three times that of a human. To handle such a force safely, both the carotid artery, which carries blood to the brain, and the jugular vein, which returns blood to the heart, need to be large. Indeed, these blood vessels are over an inch in diameter and are reinforced with tough elastic tissue, making them flexible and strong.

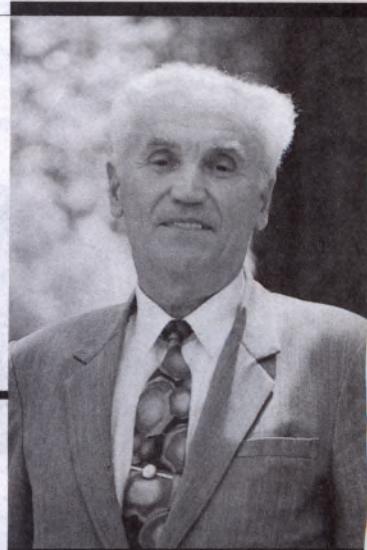
When the giraffe lowers its head, valves in the jugular vein prevent blood from rushing back to the brain. At the base of the brain, the large carotid artery runs into another wonderfully designed device that has been called the extraordinary net. Here the heavy flow of blood to the brain that results from the lowering of the giraffe's head is slowed by being directed into a special network of tiny blood vessels that regulate blood pressure and protect the brain from a forceful surge of blood. The extraordinary net expands when the head is lowered and contracts when the giraffe raises its head, thus countering the greatly reduced blood pressure and the danger of blackout.

The giraffe's neck is also a marvel of design. Scientists were surprised to discover that the giraffe's amazingly long neck contains the same number of vertebrae as does that of a mouse or most other mammals! However, unlike most other mammals, the giraffe has elongated vertebrae designed in a special ball-and-socket formation, providing remarkable flexibility. Thus, the giraffe is able to bend and contort its neck to groom all parts of its body or delicately reach up into the high boughs of a tree to feed.

# Maintaining Faith Under Totalitarian Oppression

**"Back in Germany we shoot Jehovah's Witnesses. Do you see that gun?" the Gestapo official asked as he pointed to a rifle in the corner. "I could run you through with the bayonet and not feel any guilt."**

**I was only 15 when I faced this threat during the Nazi occupation of my homeland in 1942.**



**AS TOLD BY  
MICHAEL DASEVICH**

I WAS born in November 1926 in a small village near Stanislav (now called Ivano-Frankivs'k), in what was then part of Poland. During World War II, from September 1939 to May 1945, our area was occupied first by the Soviet Union, then for a time by Germany, and finally by the Soviets again. After the war it became part of the Ukrainian Soviet Socialist Republic, and when the Soviet Union ceased to exist in 1991, it became part of Ukraine.

My Polish father and Belorussian mother were members of the Greek Catholic Church. But then, in 1939, two women who belonged to a congregation of 30 Witnesses of Jehovah in the nearby village of Horyhliady placed with us the booklet *Universal War Near*. It described events that I could see happening. Hence, when the booklet asked, "What is the real reason why the nations are hurrying to war?" I took careful note of the Bible-based explanation it gave.

War was not our only problem in Ukraine.

There was a severe famine. The policies of the Soviet Premier Joseph Stalin led to forced deportations to Russia. The suffering I witnessed made me examine the Bible closely. I asked a Witness in Horyhliady to study the Bible with me.

Our village of Odajiv is across the Dnister River from Horyhliady, and several times a week, I would take a small boat across that stretch of water for my Bible studies. In August 1941, my sister Anna and I were baptized in that river along with two others.

## **Grilled by the Gestapo**

The German occupation began in 1941, and despite the continued threat of punishment, we did not stop our Christian activity. The following year I started to pioneer, getting around on a bicycle. It was not long afterward that I had the brush with the German Gestapo referred to in the introduction. This is what occurred.



Fenia and me in 1952

On my way home from the ministry one day, I made a visit on two fellow Christians, a mother and daughter. The daughter's husband opposed our faith and was eager to find out where she obtained her Bible literature. That day I was carrying not only some literature but also reports regarding the ministry of fellow Christians. The husband saw me leaving the house.

"Stop!" he bellowed. I grabbed my bag and ran.

"Stop! Thief!" he yelled. Workers in the field thought that I must have stolen something, so they forced me to halt. The man

took me to the police station, where a Gestapo official was present.

At seeing the literature in my bag, the official screamed in German: "Rutherford! Rutherford!" I did not need a translator to figure out what was upsetting him. The name of Joseph F. Rutherford, who had been the president of the Watch Tower Bible and Tract Society, appeared on the title page of the books published by Jehovah's Witnesses. The husband then accused me of being his wife's lover. The police and the Gestapo official could see that this was absurd, since his wife was old enough to be my mother. Then they started questioning me.

They wanted to know who I was and where I came from and, in particular, where I had obtained the books. But I would not tell them. They hit me a few times and made fun of me, after which they locked me in a cellar. I was questioned for the next three days. Then I was taken into the Gestapo official's office, where he threatened to run me through with his bayonet. For a moment I didn't know whether he was going to carry out his threat. I bowed my head, and what seemed like a very long silence followed. Then he said abruptly: "You can go."

As you can see, preaching at that time was a real challenge for us, but so was holding our meetings. We celebrated the annual Memorial of Christ's death on April 19, 1943, using two rooms of a house in Horyliady. (Luke 22:19) When we were about to start our meeting, a cry went out that the police were approaching the house. Some of us hid in the garden, but my sister Anna and three other women went into the basement. The police found them there and dragged them out one by one for questioning. They went through hours of rough treatment, and one of them was seriously injured.

### **The World Scene Changes**

In the summer of 1944, the Germans retreated and the Soviets returned to our area. As servants of Jehovah, we stuck to the same Biblical principles that we had lived by while under Nazi occupation. We refused to have any part in military or political activity. Our loyalty to such Bible principles was soon put to the test.—Isaiah 2:4; Matthew 26:52; John 17:14.

Within a few days, the Soviets began drafting all young men for military service. To make matters more difficult, the Soviets were not the only ones seeking recruits. Ukrainian partisans combed the area for young men, whom they took into the forest to train as fighters. We Witnesses were thus put in the difficult position of having to prove our neutrality to two opposing factions—the Soviets and the partisans.

These two groups clashed right in our village, leaving a couple of partisans slain on the street outside our house. The Soviet authorities came to our home to find out if we knew the dead ones. The officials who came decided to take me along with them and to draft me into their army, which was forming a regiment of Polish soldiers. Because I was of Polish extraction, I was to be enlisted in it.

I, along with four other Witnesses, refused to be drafted into the army, so we were taken by rail to Dnipropetrov'sk, a city about 440 miles to the east. There, after explaining that we could not serve in the military because of our Bible-based convictions, we were taken into custody while charges against us were prepared. When we appeared in court, we learned that the civilian investigator was Jewish. In our defense, to which the investigator listened attentively, we explained our beliefs. We mentioned things that we knew would interest him, including the oppression of the Israelites and their deliverance from Egypt by Moses.

During the months that it took for the court to pass sentence upon us, we were placed in a cell with about 25 other inmates. When they learned that we had refused to join the army, they exclaimed: "You are our brothers!" Shortly, however, we discovered that they were not Witnesses but Baptists. They had been willing to join the army, but they were arrested when they refused to bear arms.

In May 1945, while still in detention in Dnipropetrov'sk, we were awakened in the middle of the night by gunshots and shouting coming from the barracks and the streets outside. We wondered whether it was a riot, a battle, or a celebration. The next morning at breakfast, we heard the news from the barbershop: The war had ended! Shortly thereafter, the court announced our sentences. The same sentence was given to the Baptists and us—ten years in prison camps.

### **Prison Camp in Russia**

We five Witnesses were sent to a prison camp in Russia. After a two-week rail journey, we finally disembarked at Sukhobezvodnoje, some 280 miles east of Moscow. Sukhobezvodnoje was the administrative center of 32 labor camps that stretched alongside the railway line. Each camp housed thousands of inmates. After six

**They wanted  
to know who I was and  
where I came from and,  
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would not tell them**

# The feeling of isolation was overwhelming. I poured out my heart to Jehovah, who strengthened me

## Back to Ukraine

Through an amnesty announced by the State, my sentence was reduced from ten years to five. Hence, in April 1950, I returned to my home congregation in Horyhliady. Our work in Ukraine was still under ban, and the risks of sharing in the ministry were great. But so were the rewards.

Soon after my return, I spoke with a man named Kozak, who lived in Zhabokruky, a village some 15 miles from my home. I asked how life was treating him and his family. I knew that workers on the collective farms were anxious about how to make ends meet, so I knew that such a question was a good way to get a conversation started. I explained that the Bible foretold food shortages and wars for our time. (Matthew 24: 3-14) He wanted to know more. So I visited him again. Week after week I walked the 30 miles or so to and from Zhabokruky to study the Bible with the Kozak family. The risks, not to mention the great amount of time involved, were forgotten when the Kozaks were baptized in August 1950.

No sooner were the Kozaks baptized than they were taken into exile along with thousands of other Witnesses. These were rounded up suddenly by armed soldiers early in April 1951 and—without trial or hearing—deported to Siberia. Here the Kozaks and many of my other friends were forced to make their new home.\*

Of the 15 families of Witnesses in Horyhliady, only 4 were deported. In other congregations, however, the proportion of Witnesses deported was much higher. How were these mass deportations arranged? Well, the authorities had lists of Witnesses and were thus able to round up large num-

months in Sukhobezvodnoje, I was sent to Camp No. 18. Most inmates there were criminals or political offenders.

The authorities put us to work felling trees, which was a very difficult task. At times we had to wade through waist-high snow, cut down trees with a handsaw, and then drag the trunks through the snow. Once a week, on Sunday after breakfast, I had the chance to discuss something Biblical with the other four Witnesses in the camp. These were our meetings. We also celebrated the Memorial, doing so in the bathhouse one year. We used blackberry juice because we had no wine to use as an emblem of Jesus' blood.

The feeling of isolation was overwhelming. I poured out my heart to Jehovah, who strengthened me as he had strengthened Elijah when the prophet was burdened by similar feelings. (1 Kings 19:14, 18) God helped me to see that we were not alone. He was indeed a stable, firm pillar in my life, even under those difficult circumstances.

The other camps near Sukhobezvodnoje each housed a handful of Witnesses, and we were able to maintain contact with them from time to time through a Witness whose job allowed him to visit all the camps. He acted as a go-between, smuggling literature in and out of the camps. This enabled us to share what little literature we had. What an encouragement that proved to be!

\* See the articles "Over 40 Years Under Communist Ban," in the March 1, 1999, issue of *The Watchtower*, pages 24-9, and "Exiled in Siberia!" in the April 22, 1999, issue of *Awake!*, pages 20-5.

bers of them at will. It seems that the lists had been compiled in 1950, when I was still in prison in Russia, so my name was missing. One month earlier, in March 1951, I had married Fenia, a loyal servant of Jehovah. Fenia's family were all exiled, but she escaped the same fate because she had married me and now bore my name, which was not on the list.

### Difficult Tests of Faith

Following the deportations, those of us still at home had to reorganize the work. I was asked to look after the congregations in the nearby region of Ivano-Frankivs'k, where, even after the deportations, there were still about 30 Witnesses left in each of the 15 congregations. As a self-employed carpenter, I had a flexible schedule, so I would meet secretly with the brothers from each congregation once a month.

Often we met at night in a cemetery where we were sure to be alone. A principal matter for discussion was how to see to it that all the congregations had some Bible literature. Occasionally we would receive a current *Watchtower* magazine in Polish or Romanian and translate it into Ukrainian. However, the authorities were constantly at our heels, trying to locate and destroy our primitive duplicating machines.

But our biggest problem was that we were isolated from our Christian brothers in other lands, including those in Brooklyn, New York, who were taking the lead in our Christian activity. The consequence was that our congregations were often vexed by disunity, rumors, and intrigue. Some Witnesses left the organization and formed opposition groups. False and negative stories even circulated concerning those taking the lead in Brooklyn.

Thus, many of us found that our most difficult trials of faith were the result not of persecution by opposers but of con-

flicts within the congregations. Even though some chose no longer to worship with us, we learned that it was vital to hold on to the organization and wait for Jehovah to sort things out. Happily, the majority of the Witnesses in our area did just that. I am also happy to say that many of those who left the organization recognized their error and later returned to serve Jehovah with us.

Even during those difficult times of isolation, we kept busy in the public ministry and were richly blessed. And what rewards we have seen! Each time I now attend our Congregation Book Study, I am reminded of the blessings of Jehovah. Every one of the 20 or more in our study group was helped to learn the truth by members of my family.

My parents and sister Anna have all died, having remained faithful to Jehovah. Fenia and I are still as active as possible in serving Jehovah. The time has indeed flown. During the past 30 years, Jehovah's Witnesses in Ukraine have experienced stirring events that are impossible to relate in this short account. But I am content to look back on my many years of service to Jehovah, confident that he will remain my firm pillar and support, for he says of himself: "I am Jehovah; I have not changed."—Malachi 3:6.

With Fenia today





# Making Air Travel SAFER

**T**HE captain pushes the throttles forward, and the first officer acknowledges receiving clearance from air traffic control. Sitting behind the pilots as a cockpit observer, I feel my heart pounding as the jet engines let out a muffled roar. My body is thrust back in my seat as the Boeing 747—a “big iron,” in the jargon of pilots—accelerates. Then, with perfect smoothness, we are airborne, and Runway No. 34 of the New Tokyo International Airport falls away behind and below us.

## Danger in the Air!

A few moments later, we hear a loud bang, and the aircraft starts to shake and turn violently. An earsplitting sound fills the cockpit. It's an alarm bell! Several red and amber warning lights illuminate the instrument panels as the first officer tries to straighten out the turn.

“Fire number three engine!” shouts the captain as he pushes a button that silences the alarm. “No rotation, no oil pressure, no hydraulics number three,” says the first officer. “Throttle back number three. Fuel cutoff number three. Number three pack off.” After each command is called out, the appropriate action is taken by one pilot and then verified by



the other. As if their movements were choreographed, they work at the situation together. I'm amazed at the way they remain calm and yet act decisively to get the situation under control.

Next, the first officer radios air traffic control requesting emergency landing clearance and asks to have emergency equipment standing by. He then notifies the flight attendants to prepare the cabin for an emergency landing.

As the crew complete their emergency checklists, I try to wipe the perspiration from my brow while holding on tight in my seat! Much to my relief, the plane makes a smooth



landing. I also feel a little silly for being so scared. You see, none of the above was real. I wasn't flying over Japan. I was sitting in an advanced flight simulator (similar to the one shown above) at the United Airlines Flight Center, in Denver, Colorado, U.S.A. The flight crew were just training. For me—a veteran of desktop computer flight simulators—this was an exhilarating experience.

#### Mimics in the Interest of Safety

Similar scenarios are played out by flight crews hundreds of times every day in simulators such as this one. Why? For their training and for the

safety of the traveling public—your safety. But why is such training done in simulators rather than in real airplanes? There are many reasons, but before we consider them, let's first take a look at how flight simulation has developed.

During the first and second world wars, schools using rudimentary flight simulators were set up to help with the increased demand for qualified pilots. During the late 1960's, aviation simulation took a great leap forward, as simulators became very realistic. They even began to replicate subtle details, such as the way an airplane handles according to both how much it weighs and how much fuel it has on board. Such factors affect its handling. Then, during the course of a flight, the fuel burns and the aircraft's flight characteristics change. Advances in electronics and computers have made it possible to simulate these and many other conditions.

The goal is to make simulators that mimic real flight as closely as possible.

To this end, modern simulators have large, powerful hydraulic bases that give six degrees of motion. The system is powered by large hydraulic pumps that can momentarily subject the flight crew to a range of motion producing a force from +1 to -1 g.\*

As pilots adjust the controls, they can feel the results in real time—just as they would in an aircraft. Acceleration, deceleration, roll, pitch, runway touchdown and roughness, and weather conditions are all sensed not only by the pilot's inner ear but also by the rest of his body.

Advancement has been made in the use of computer-created visual systems that depict specific

\* The symbol g is used to measure acceleration forces that act on people in any kind of vehicle. The earth's gravitational force produces a standard acceleration of 1 g. When a pilot pulls a plane out of a dive, he feels an extra force pushing him down into his seat. If this force is twice that of gravity, it is rated at 2 g's.





**Simulated takeoff from San Francisco ▲ and flight over New York City ▼**



world airports and their surrounding terrain. These true-to-life images are projected on screens that surround the front of the simulator cockpit. The angle of the image is up to 180 degrees in width and 40 degrees in height. Simulators allow pilots to "fly" in all weather conditions—snow, rain, lightning, hail, and fog—and during the day, at dusk, or at night.

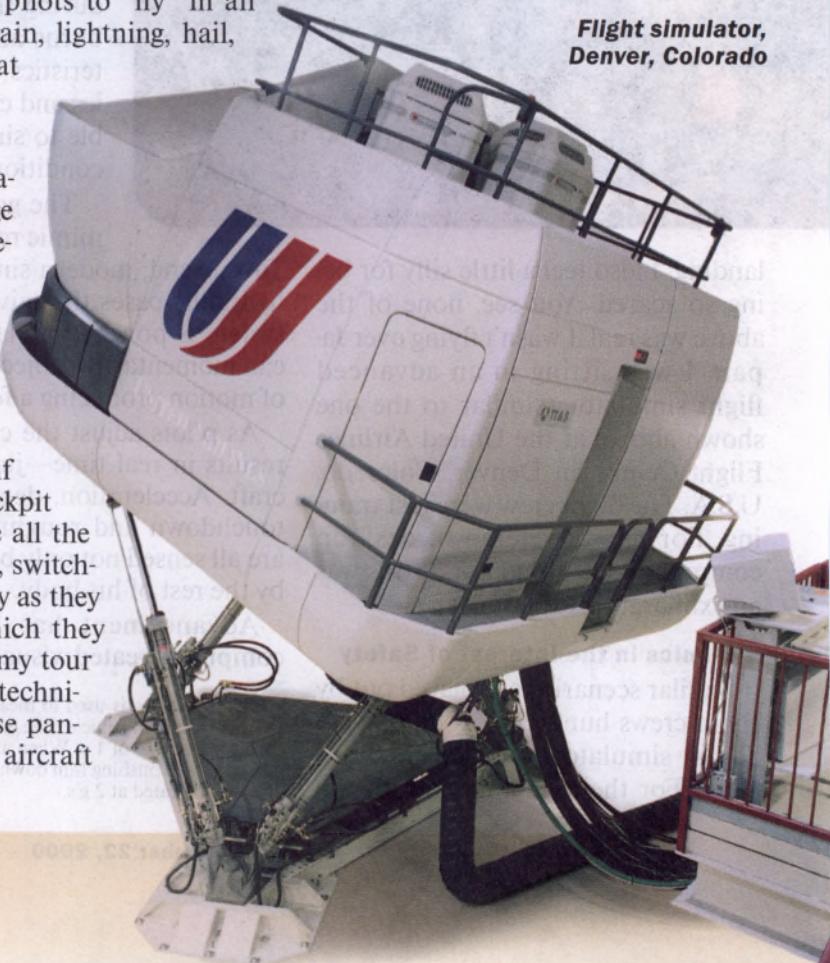
#### **Visiting a Simulator**

The approach to the simulator I visited was a metal bridge crossing a 20-foot-wide gap between "land" and a large, white windowless box mounted on a huge movable platform. The device looks like a lunar lander or a giant spider.

Once inside, you feel as if you have just entered the cockpit of an actual aircraft. You see all the dials, indicator lights, gauges, switches, and levers arranged exactly as they are in the aircraft upon which they are modeled. Terry Bansept, my tour guide and a flight simulator technician, noted that many of these panels and instruments are actual aircraft parts.

Terry explained that flight simulators have grown to be full-size, fully functional, exact copies of the cock-

**Flight simulator,  
Denver, Colorado**



pit of various models of aircraft. As the use of flight simulation has increased, the aviation community has learned that simulators provide high-quality flight training. Besides teaching pilots to fly, simulated instruction also incorporates training for emergency procedures.

If a simulator meets a certain standard of fidelity, pilots may even log the time spent in it, just as if they had been flying the actual aircraft. Under certain conditions, a pilot's training and testing may take place almost entirely in a simulator.

### Why Simulators?

Simulators serve a number of practical purposes. Their use in lieu of actual aircraft saves fuel and oil. It also reduces air-traffic congestion, noise and air pollution, and training and operating costs. To "crash" a simulator costs nothing, and nobody is hurt.

"Simulators may reduce the number of training accidents," Terry said. "They allow for training in handling emergencies, such as engine fire, landing-gear collapse, tire blowout, total loss of thrust, inclement weather, wind shear, icing, and adverse visibility." Also, extensive systems training can be given, and system malfunctions and failures can be handled with no risk to aircraft or human life.

Commenting on this, experienced pilot J. D. Whitlatch observed: "The scenarios we use in the simulators represent 6 million possible combinations of events and conditions. There is no way we could train flight crews for that many experiences in a real airplane."

In the United States, the simulators themselves are carefully checked

and certified by the Federal Aviation Administration (FAA), test pilots, and technicians. Before every training day, technicians repair, check, and "fly" their simulators to make sure that these will faithfully replicate the aircraft. When modifications are made to actual aircraft, these changes have to be incorporated into the simulators as well. Every six months, FAA representatives "fly" the simulators to make sure that they are accurate.

### Learning From Past Tragedies

By using the information on aircraft flight data recorders and cockpit voice recorders recovered from accident sites, engineers can program simulators to duplicate the exact conditions and malfunctions that occurred in actual and specific aircraft accidents. This information and simulation can then be used as a tool to help investigators determine the cause of individual accidents. In addition, such data can help teach future generations of pilots how to react to unexpected problems. It is also used by aircraft and component manufacturers to determine how to design and construct better aircraft and components in the future.

If an investigation reveals that pilot error caused an accident or a near accident, then training can be initiated so that similar errors can be avoided in the future. Lew Kosich, a seasoned pilot, says: "The scenarios we show are not fictional; they actually happened somewhere." In an effort to improve pilot reactions, training programs, and ultimately public safety, industry experts are continually evaluating and recreating real-life situations and studying pilot reactions to these.

As I now try to "land" the "Boeing 747" at "Charles de Gaulle Airport"—under the watchful eye of my copilot Terry—I expect to hear the sweet chirp of tires touching down on the tarmac. Alas, a bad maneuver freezes the screen of the simulator! I just crashed a "big iron" into the air traffic control tower!

How glad we all can be that the pilots who actually fly passenger planes are real experts—thanks in part to flight simulators. The next time you fly, you can rest assured that you and your fellow passengers are in highly trained hands.—Contributed.



## WATCHING THE WORLD

### Graffiti-Free Paris?

"The task force is impressive," states the French newspaper *Le Figaro*. There are "17 equipped vans, 7 minibuses specializing in fighting graffiti, a dozen scooters, and about 130 workers supported by 16 scouts whose job it is to locate graffiti." The mission of the new Paris antograffiti brigade is to remove within a year 90 percent of Paris' graffiti on walls and shutters—estimated at "200,000 square meters [about 2,000,000 square feet] on municipal and public buildings and 240,000 square meters [about 2,500,000 square feet] on private walls." If the city's goals are met, all but 250,000 square feet of graffiti on private buildings will disappear by February 2001, and "any new graffiti should disappear within 12 days after being spotted." In all, the cleaning operation is expected to cost 480 million French francs (\$72 million).

### The Overfed Now Equal the Underfed

"The number of overweight people in the world now rivals the number of hungry, underfed people," notes *The New York Times*, commenting on a study by Worldwatch Institute. Some 1.2 billion are underfed and hungry, and an equal number or more now eat too much. Worldwide more people than ever before are malnourished, and the number of those underfed and those overfed is increasing in all societies. "We've created a way of life where our level of physical activity has been so reduced that our calo-

ric intake greatly exceeds our caloric expenditure, and that surplus translates into fat," said Lester R. Brown, president of Worldwatch, speaking of the increasing number of the overweight. "In [the United States] last year, there were 400,000 liposuction procedures. It shows how out of balance things are."

### Americans Own the Most Pets



Of the world's 500 million pets, about 40 percent are in the United States. "Nearly 60 percent of the nation's households include at least one of 70 million cats, 56 million dogs, 40 million birds, 100 million fish, 13 million hamsters and other small mammals, and 8 million reptiles," reports *National Geographic*. Britain ranks second in pet ownership—mostly cats and dogs. "But 21 million pet fish reign in France, more than cats and dogs combined," says the magazine.

### Supreme Court of Japan Rules in Favor of Witness

Japan's Supreme Court has ruled that "surgeons violated a woman's right to self-determination when they gave her a blood transfusion during an operation, breaking their promise not to do so even if it

meant she would die," states the *Daily Yomiuri* newspaper. "It was the first time that the Supreme Court has ruled that a patient's right to make decisions regarding her treatment was a human right." Misae Takeda, one of Jehovah's Witnesses, was given the transfusion in 1992, while still under sedation following surgery to remove a malignant tumor of the liver. The four judges of the Supreme Court unanimously decided that doctors were at fault because they failed to explain that they might give her a blood transfusion if deemed necessary during the operation, thus depriving her of the right to decide whether to accept the operation or not. The ruling of February 29, 2000, said: "When a patient refuses to undergo a transfusion because of his or her religious beliefs, such a will must be respected." Relatives had continued the lawsuit after Misae died in 1997.—For details, please see *The Watchtower* of December 15, 1998, pages 26-9.

### Saving Earth's Species

"Saving a large share of the world's species from extinction isn't overwhelming," says the *Daily News* newspaper of New York City. "Scientists who inventoried Earth's shrinking wilds have reached an astonishing conclusion: More than a third of the planet's plant and animal species exist exclusively on a scant 1.4% of its land surface." The researchers suggest that more effort be focused on safeguarding 25 species-rich areas in such places as Brazil,

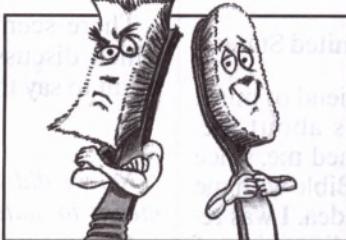
Madagascar, Borneo, Sumatra, the tropical Andes, and the Caribbean. Most are tropical rain forests. "For a few hundred million dollars a year, focused on these hot spots, we can go a long way toward guaranteeing maintenance of the full range of diversity of life on Earth," said Russell Mittermeier, president of Conservation International. While some 38 percent of these areas are already protected legally, it is mostly only on paper, since mining, grazing, and logging continue.

#### Clergy Shortage Spreading

A "shortage in clergy" has spread from rural areas in the United States to the large cities, states *The New York Times*. Citing the example of a 110-year-old synagogue that has tried in vain for over three years to attract a rabbi, the article states: "The temple's plight is not unusual. Not only are synagogues finding it increasingly difficult to hire clergy members, so too are Roman Catholic and Protestant churches." Parish priests have decreased by 12 percent from 1992 to 1997. A spokesman for the Episcopal Church calls their situation grave, with fewer than 300 of the 15,000 members of the clergy born after 1964. Over 22 percent of Reform Judaism congregations do not have a full-time rabbi. Only five years ago, there were more rabbis than synagogues. Some clergymen blame the shortage on a "robust economy" in which people are "attracted to more lucrative fields." Others say that it is due to the ministry's "declining appeal." Rabbi Sheldon Zimmerman, president of Hebrew Union College,

warns: "Unless we somehow increase the number of those choosing religious professional life, ultimately this will be a disaster for organized religious life."

#### Caution Needed When Brushing Teeth



"It's possible to brush your teeth too much," says a report in *The Wall Street Journal*. "The problem is commonly called 'toothbrush abrasion,' and it can lead to sensitive teeth, receding gums and wear around the root of the tooth." An estimated 10 to 20 percent of the U.S. population "have damaged their teeth or gums as a result of overbrushing." Diligent brushers and those using harder bristles are most at risk. "They end up doing more harm than good in the interest of being thorough," says dentist Milan SeGall. Some people are genetically predisposed to the problem because they are born with less bone surrounding their teeth. Also vulnerable are people who have straightened or moved their teeth by means of braces and those who grind or clench their teeth. To prevent damage, the experts recommend the following: Use a soft toothbrush. First brush the back teeth, as at the start even soft brushes are somewhat firm and toothpaste is more abrasive. Gently grip the brush with

just a few fingers rather than a fist. Position the brush at a 45-degree angle to the gum line, and swish gently in an elliptical motion instead of sawing back and forth.

#### Leaning Tower of Pisa Straightening Up

Work to straighten the Leaning Tower of Pisa resulted in a two-inch improvement in just the first three months of the year, notes a dispatch of The Associated Press. Engineers believe that by June 2001 it will be sturdy enough to be open to the public again. The 12th-century tower was last climbed by tourists over ten years ago, when its tilt was deemed dangerous and efforts to straighten it began. The work is now in the final phase, and predictions are that when it is completed, the tower will lean as much as 20 inches less. Before it is reopened, the 800 tons of lead counterweights that were put at the base during the straightening process and the ten steel rings put around it for strengthening will be removed.

#### Breast-Feeding's Added Benefit

"Besides providing your newborn with protective antibodies against diarrhea, ear infections, and allergies, breast milk may also prevent cancer," says *Parents* magazine. A University of Minnesota Cancer Center study found that breast-fed babies are less likely to develop leukemia—the most common form of childhood cancer—than are bottle-fed babies. Those breast-fed for at least a month showed a 21-percent lower risk, which increased to 30 percent for those breast-fed for six months or more.

## FROM OUR READERS

**Torture Victims** Thank you so much for printing the article "Help for Victims of Torture." (January 8, 2000) Its depth of understanding and empathy helped me to relate the information to my own personal problems.

B. R., United States

I received a message from a friend of mine. He said simply: 'The article is about me. Please read it.' This note saddened me, since he was the one who studied the Bible with me back in the early '70's. I had no idea. I was relieved that you put out a frank discussion of the emotional turmoil of victims throughout the world who have suffered at the hands of others.

L. W., United States

**Memorable Song** Thank you for the short article "A Song That Stayed With Her." (December 22, 1999) This wonderful song does indeed bring praise to Jehovah and tears to the eyes. Franz Schubert was not afraid to use Jehovah's grand name.

K. C., United States

*For the information of our readers, the song "Die Allmacht" (Opus 79, No. 2), while religious in nature, was not written for church use. Schubert reportedly composed it as a result of being moved by the majesty of the mountains while in Austria.—ED.*

**Design in Nature** I have been a reader of *Awake!* for over 30 years, but I feel compelled to express my gratitude for the series "Life—A Product of Design." (January 22, 2000) I am not naturally drawn to scientific subjects, but I found myself captivated by these easy-to-read articles.

T. E., United States

The articles increased my love and appreciation for Jehovah. I can now see that eternal

life in Paradise will never be boring. There will always be wonderful things to discover about our Creator. The learning process will be endless.

J.R.A., Brazil

There seemed to be an error on page 7, which discusses the fly's gearbox. Did you mean to say that "it links wings to wings"?

P. S., United States

*No, we did not. Please pardon our error. We meant to state that it links "engine" to wings—the "engine" referring to the muscles in the thorax that drive the wings.—ED.*

I have worked in the research department of a large computer company for many years, and I've had an interest in applying designs found in nature. But I was not aware that there is now a specific branch of science dealing with this, namely, biomimetics. It's sad that many who are involved in such wholesale copying of nature probably won't give credit to the original Designer.

P. G., United States

The article was wonderfully written. Some of the people I gave it to made some very positive comments about how God can make everything perfect without polluting. Thanks to your work, you made difficult material easy to read.

R.D.S., Italy

**Internet Dangers** The article "Young People Ask . . . How Can I Avoid Dangers on the Internet?" (January 22, 2000) presented an excellent balance of the Internet's usefulness and dangers. As one who works on the Internet every day as a part of my employment, I find that the dangers are constantly in evidence. How important it is to avoid those dangers!

J. L., United States



## "You Wrote About My Life!"



Over the years, *Awake!* has published articles concerning various illnesses. Of course, *Awake!* is not a health journal, and so it does not promote one remedy above another. Still, in discussing an ailment, this magazine strives to describe the problem, identify its causes, and provide Scriptural and practical counsel for the benefit of sufferers and their caregivers.

For example, the article "Understanding and Living With Fibromyalgia" was published in the issue of June 8, 1998, and it elicited worldwide response. Indeed, letters of appreciation were received even many months after the article was published. "I feel as though a mountain has been lifted off me," wrote one woman. "It was like you wrote about my life!" wrote another, adding, "I know how to cope with this illness now."

Professionals too appreciated the article. The senior vice president of medical affairs for the Arthritis Foundation in the United States wrote: "I think that the article on fibromyalgia is balanced, complete, and quite good. I also applaud the incorporation of biblical quotes and the importance of faith in this condition and all other medical conditions."

Many other letters were received. The following are some excerpts.

"My doctor encouraged me to read everything I could find on the subject. Your article is the best I've read."—L. R.

"Many have asked me about my illness. Usually I would give them a pamphlet. Now I can direct them to this issue of *Awake!* Absolutely *nothing* is as comforting!"—K. K.

"The article reassured me that I am not a failure and that Jehovah still considers me of value."—D. C.

"I felt as though, for the first time, others out there understand what I am going through."—C. H.

"It is comforting to know that we do not suffer alone."—C. A.

"I feel very bad that I cannot do what I used to. I will keep this article near my bed so that I can read it again and again when I need encouragement."—K. B.

"Up until now, I have ignored the pain as much as possible, done as much as I could, and then collapsed. Your way sounds like an improvement."—M. C.

"I am 14 years old, and I was diagnosed with fibromyalgia when I was 12. It brought tears to my eyes to know that Jehovah cares about us. Please continue to write encouraging articles like this one!"—K.A.M.

# "My Hat's off to All of You"

**T**HAT is what a devout Catholic from Fairhope, Alabama, U.S.A., wrote regarding the literature of Jehovah's Witnesses and those who have taken it to him.

"The Watchtower and Awake! magazines are excellent in writing and story content," he said. "I am always happy when some of your people come to bring me a copy of each. And I do read both of them."

"Your people are so nice and mannerly, and I feel so good seeing people

doing God's (Jehovah's) work with a smile. This last time, two little kids came to my door and introduced themselves and offered me the magazines. I thanked them and felt so good seeing young kids doing good works instead of being troublemakers.

"I am a devoted Catholic . . . , but I can admire the great work your organization and its people are doing. From the bottom of my heart, I say that I really enjoy your magazines and admire your wonderful, smiling people. . . . My hat's off to all of you. Keep up the good work."

