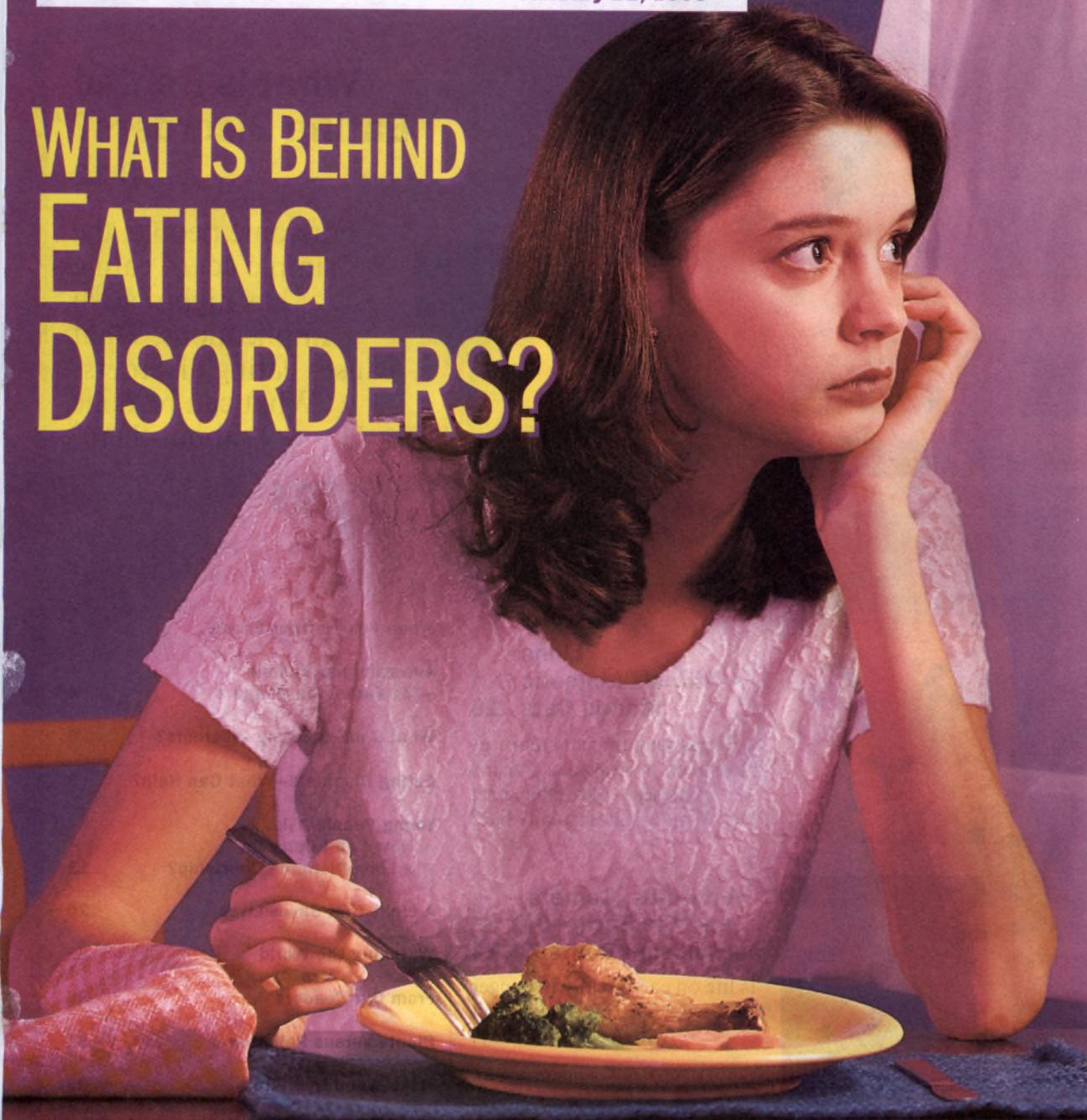


# Awake!

January 22, 1999

## WHAT IS BEHIND EATING DISORDERS?



## What Is Behind Eating Disorders?

**3-12**

For some people, the simple act of eating has nightmarish implications. What causes eating disorders? What can be done about them?



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Courtesy of ROE/Anglo-Australian Observatory,  
photograph by David Malin

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# WHEN FOOD IS YOUR ENEMY

Reflecting on her teen years, Jean vividly recalls being a target of teasing and ridicule. The reason? She was the tallest and largest girl in her class at school. But that was not all. "Even worse than being big, I was shy and socially awkward," says Jean. "I was often lonely, wanting to fit in somewhere, but most of the time I felt like an outsider."

Jean was convinced that her size was the cause of all her problems and that a lean, trim figure would fix everything. Not that Jean was obese. On the contrary, at six feet tall and 145 pounds, she wasn't overweight. Nevertheless, Jean felt fat, and at age 23 she decided to lose weight. 'When I'm thin,' she reasoned, 'other people will want me around. At last, I will feel accepted and special.'

"That kind of foolish logic led to a twelve-year trap named anorexia nervosa and bulimia," Jean explains. "I got thin all right, so thin I almost died, but instead of building a happy life, I ruined my health and created more than a decade of depression and misery."



Jean is not alone. According to one estimate, up to 1 out of 100 American females develops anorexia nervosa as a teenager or young adult, and perhaps three times that number are bulimic. "I've been working on schools and college campuses for years," says Dr. Mary Pipher, "and I see firsthand that eating disorders are just as rampant as ever."

They are also diverse. Once thought to be a problem of the wealthy, eating disorders are now considered to be common in all racial, social, and economic levels. Even the number of men being diagnosed is increasing, causing *Newsweek* magazine to call eating disorders "equal-opportunity plunderers."

What is especially alarming, though, is that the average age of those being treated for eating disorders appears to be getting lower. "There are girls younger than 10, even as young as 6, being admitted to hospital programs," says Margaret Beck, acting director

of an eating disorder center in Toronto. "It is still a small number," she adds, "but it is growing."

All told, eating disorders affect millions—primarily girls and young women.\* "They don't think about food or use food the way the majority of people do," notes social worker Nancy Kolodny. "Instead of eating when they're hungry, eating for nutrition and good health, eating for pleasure, or eating to share good times with others, they get into bizarre relationships with food and do things that aren't considered 'normal'—such as developing odd rituals before they allow themselves to eat, or needing to immediately rid their bodies of the food they've eaten."

Let us take a close look at two common eating disorders: anorexia nervosa and bulimia nervosa.

\* Since eating disorders affect more women than men, in this series we will usually refer to the sufferer in the female gender.

# ANOREXIA AND BULIMIA THE FACTS, THE DANGERS

"Food carries an emotional weight far heavier than anything that can be measured in calories or grams."—Janet Greeson, author.

**A**NOREXIA and bulimia are the two most common eating disorders. Each has its unique characteristics. Yet, as we shall see, both can be dangerous—even deadly.

## Anorexia—Self-Starvation

Anorexia sufferers, anorexics, either refuse to eat or eat in such small amounts that they become malnourished. Consider 17-year-old Antoinette, who says that at one point her weight may have dropped to 82 pounds—very low for a teenager five feet seven inches tall. "I ate no more than 250 calories a day and kept a notebook about what I ate," she says.

Anorexics are obsessed with food, and they will go to extreme lengths to avoid gaining weight. "I started to spit my food out in a napkin pretending I was wiping my mouth," says Heather. Susan strenuously exercised to keep her weight down. "Virtually every day," she says, "I ran eight miles, or swam for an hour, or felt terribly anxious and guilty. And

every morning I got my greatest pleasure, usually my *only* real pleasure, by getting on the scale to confirm that my weight was well under 100 pounds."

Ironically, some anorexics become excellent cooks and will serve exquisite dinners that they themselves refuse to touch. "When I was at my very worst," says Antoinette, "I prepared every single dinner at home and made all the brown-bag lunches for my little brother and sister. I wouldn't let them near the refrigerator. I felt like the kitchen was all mine."

According to the book *A Parent's Guide to Anorexia and Bulimia*, some anorexics "become obsessively neat and may demand that the entire family meet their unrealistically fastidious standards. No magazine or pair of slippers or coffee cup may be left out of place for a moment. They may become equally, or even more, obsessed with personal hygiene and appearance, spending hours in the bathroom with the door locked and re-

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

*Awake!* (ISSN 0005-237X) is published semimonthly by Watchtower Bible and Tract Society of New York, Inc., 25 Columbia Heights, Brooklyn, NY 11201-2483. Periodicals Postage Paid at Brooklyn, N.Y., and at additional mailing offices. **Postmaster:** Send address changes to *Awake!*, c/o Watchtower, Wallkill, NY 12589. Printed in U.S.A.

fusing to allow others to come in to get ready for school or work."

How does this unusual disorder called anorexia develop? Typically, a teenager or young adult—most often a female—sets out to lose a certain number of pounds. When she reaches her goal, however, she is not satisfied. Looking in the mirror, she still sees herself as fat, and so she decides that shedding a few more pounds would be even better. This cycle continues until the dieter's weight falls to 15 percent or more below what is normal for her height.

At this point friends and family members begin to express their concern that the dieter looks extremely thin, even emaciated. But the anorexic sees things differently. "I didn't think I looked skinny," says Alan, a five-foot-nine-inch male anorexic whose weight at one point dwindled to 72 pounds. "The more weight you lose," he says, "the more your mind becomes distorted and you can't see yourself clearly."\*

Over time, anorexia can lead to serious health problems, including osteoporosis and kidney damage. It can even be fatal. "My doctor told me that I had deprived my body of so many nutrients that two more months of my eating habits, and I would have died of malnutrition," says Heather. *The Harvard*

\* Some experts claim that a 20- to 25-percent loss of a person's total weight can induce chemical changes in the brain that may alter his perception, causing him to see fat where there is none.

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\* Audiocassettes also available.

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*Mental Health Letter* reports that over a ten-year period, about 5 percent of women diagnosed as anorexic die.

#### Bulimia—Bingeing and Purging

The eating disorder known as bulimia nervosa is characterized by bingeing (rapidly consuming large amounts of food, perhaps up to 5,000 calories or more) and then purging (emptying the stomach, often by vomiting or using laxatives).\*

In contrast with anorexia, bulimia is not easily recognized. The sufferer may not be unusually thin, and her eating habits may seem quite normal—at least to others. But for the bulimic, life is anything but normal. Indeed, she is so obsessed with food that everything else is unimportant. "The more I binged and threw up, the less I cared about other things or people," says 16-year-old Melinda. "I actually forgot how to have fun with friends."

Geneen Roth, a writer and teacher in the field of eating disorders, describes a binge as "a thirty-minute frenzy, a dive into hell." She says that during a binge "nothing matters—not friends, not family . . . Nothing matters but food." A 17-year-old sufferer named Lydia describes her condition with a vivid analogy. "I feel like a trash compactor," she says. "Shovel it in, smash it, throw it out. Over and over, the same thing."

\* Compulsive overeating without purging is also considered by some to be an eating disorder.

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The bulimic is desperate to prevent the weight gain that would normally result from her uncontrolled eating. Immediately after the binge, therefore, she either induces vomiting or takes laxatives to eliminate the food before it can be turned into body fat.\* While the very idea of this might seem repulsive, the experienced bulimic does not view it that way. "The more you binge and purge, the easier it becomes for you," explains social worker Nancy Kolodny. "Your early feelings of revulsion or even fear are quickly replaced by the compulsion to repeat these bulimic patterns."

Bulimia is extremely dangerous. For example, repeated purging by vomiting exposes the mouth to corrosive stomach acids,

\* To keep from gaining weight, many bulimics exercise strenuously every day. Some of these are so successful with weight loss that in time they become anorexic, and thereafter they might alternate between anorexic and bulimic behavior.

which can wear away the enamel of the bulimic's teeth. The practice can also damage the sufferer's esophagus, liver, lungs, and heart. In extreme cases, vomiting can cause stomach rupture and even death. Excessive laxative use can also be hazardous. It can destroy bowel function and can also lead to ongoing diarrhea and rectal bleeding. As with repeated vomiting, abuse of laxatives can, in extreme instances, lead to death.

According to the National Institute of Mental Health, the incidence of eating disorders is consistently rising. What moves one young woman to flirt with death by starving herself? Why does another become so obsessed with food that she binges and then becomes so obsessed with her weight that she feels compelled to purge what she has eaten? These questions will be explored in the following article.

## WHAT CAUSES EATING DISORDERS?

"An eating disorder doesn't just pop up out of nowhere. It's a symptom, a signal that something is wrong in a person's life."—Nancy Kolodny, social worker.

EATING disorders are not new. Anorexia nervosa was first formally diagnosed in 1873, and the symptoms have reportedly been observed as far back as 300 years ago. Since World War II, however, the number of anorexics appears to have increased dramatically. The situation is similar with bulimia. The condition has been known for centuries, but in recent decades it has, as one book on the subject puts it, "exploded onto center stage."

What is behind eating disorders? Are they inherited, or are they an unusual reaction to a culture that glorifies thinness? What part does family environment play? These questions are not easily answered. As social worker Nancy Kolodny says, defining an eating disorder "isn't as straightforward as diagnosing a medical condition like measles or chicken pox, where a doctor knows exactly what the cause is, how you catch it, how long the illness will last, and what the best course of treatment is."



**Anorexics often have a distorted view of their appearance**

Nevertheless, researchers point to a number of factors that may contribute to the development of eating disorders. Let us consider a few of them.

#### **The Culture of Thinness**

In affluent lands the fashion industry parades stick-thin models before young and im-

pressionable onlookers, indoctrinating them with the notion that a girl is only as beautiful as she is thin. This distorted message compels many women to strive for a body weight that is both unhealthy and unrealistic. Dr. Christine Davies observes: "The average woman is five feet, five inches and 145 lb. The average model is five feet, 11 inches and 110 lb. Ninety-five percent of us don't match up and never will."

Despite this fact, some women will go to extremes to acquire what they perceive to be the ideal body. For example, in a 1997 survey of 3,452 women, 24 percent said that they would be willing to give up three years of their life to attain their weight goal. For a significant minority, the survey said, "life is worth living only if you are thin." Since 22 percent of those surveyed said that fashion magazine models influenced their body image when they were young, the report concluded: "It's no longer possible to deny the fact that images of models in the media have a terrible effect on the way women see themselves."

Of course, those who are most likely to fall prey to the media's artificial ideal are those who do not feel good about themselves to begin with. As clinical social worker Ilene Fishman says, "the bottom line is self-esteem." It has been noted that people who accept the way they look rarely develop obsessions with food.

#### **Eating and Emotions**

Many experts say that there is more involved in an eating disorder than food. "An eating disorder is a red flag," says social worker Nancy Kolodny, "telling you that you need to pay attention to some situation in your life that you're ignoring or avoiding. An eating disorder is a reminder that you aren't giving voice to whatever stresses and frustrations you may be experiencing."

**The media promote the idea  
that thin is beautiful**

What type of stresses and frustrations? For some it might involve trouble on the home front. For example, Geneen Roth recalls that during her childhood, food—in particular, sweets—became her “defense against slammed doors and raised voices.” She says: “When I sensed a parental fight brewing, I would switch my awareness, as easily as you switch a TV channel, from feeling at the mercy of my mother and father to a world in which nothing existed but me and the sweetness on the roof of my mouth.”

Sometimes an eating disorder has even deeper roots. For example, *The New Teenage Body Book* notes: “Studies show that those who have sexual trauma (abuse or molestation) may unconsciously try to protect themselves by making their bodies sexually unattractive and by focusing their attention on something safe like food.” Of course, people should not jump to the conclusion that one suffering from an eating disorder has been sexually molested.

The seeds of an eating disorder can be sown in what may appear to be tranquil soil. Indeed, a prime candidate for anorexia may be a girl who lives in an environment in which she is not free to make any of her own decisions or to express her negative feelings. Outwardly, she complies; but inwardly, she is in turmoil and feels that she has no control over her life. Not daring to rebel openly, she focuses on the one part of her life that she can control—her body.

It should be noted, however, that eating disorders are not always the result of family turmoil or sexual trauma. For some, eating disorders develop simply because weight is a dominant issue in the family. Perhaps a parent is overweight or is





constantly dieting and engenders an overly cautious—or even a fearful—attitude toward food. For others, the onset of puberty is in itself a factor. The bodily changes that are part and parcel of the transition to adulthood can make a girl feel that she is fat—especially if she matures more quickly than her peers. She may take extreme measures to stave off the curves of womanhood if she finds this transition to be frightening.

In addition to citing emotional factors, some researchers say that there may be a

physical factor involved. For example, they point out that bulimia may be rooted in the sufferer's brain chemistry. They claim that the part of the brain that controls moods and appetite is involved and that this may explain why antidepressants are at times effective in alleviating the bulimic's symptoms.

In any event, it is difficult for researchers to isolate a single factor that causes anorexia or bulimia. But what can be done to help those who are struggling with these eating disorders?

# EATING DISORDERS WHAT CAN HELP?

**F**YOUR daughter has an eating disorder, she needs to get help. Do not postpone matters under the assumption that the problem will go away on its own. An eating disorder is a complex illness, with physical and emotional components.

Of course, experts have put forth a confusing array of treatments for eating disorders. Some recommend medication. Others endorse psychotherapy. Many say that a combination of both is most effective. Then there is family counseling, which some say is especially vital if the sufferer is still living at home.\*

\* *Awake!* does not endorse any particular treatment. Christians should make their own decision, being sure that any treatment they pursue does not conflict with Bible principles. Others should not be critical or judgmental of such decisions.

Although experts may differ in their approach, most agree on at least one point: Eating disorders are not just about food. Let us examine some of the deeper issues that typically need to be addressed when someone is being helped to recover from anorexia or bulimia.

## A Balanced View of Body Image

"I stopped buying fashion magazines completely when I was about 24," says one woman. "Comparing myself to the models had a very strong and negative impact." As already discussed, the media can distort a girl's concept of beauty. Indeed, one mother of a girl with an eating disorder speaks of "the unrelenting publicity in our newspapers and magazines and television advertising to be thin, thin, thin." She says: "Both my daughter and I like being slender, but we feel the constant barrage turns it into being the most important thing in life, ahead of everything." Clearly, recovering from an eating disorder

**It takes patience, understanding, and a lot of love to help those with eating disorders**

may require adopting new beliefs about what constitutes genuine beauty.

The Bible can help in this regard. The Christian apostle Peter wrote: "Do not let your adornment be that of the external braiding of the hair and of the putting on of gold ornaments or the wearing of outer garments, but let it be the secret person of the heart in the incorruptible apparel of the quiet and mild spirit, which is of great value in the eyes of God."—1 Peter 3:3, 4.

Peter is saying that we should be more concerned about inner qualities than outer form. Indeed, the Bible assures us: "Not the way man sees is the way God sees, because mere man sees what appears to the eyes; but as for Jehovah, he sees what the heart is." (1 Samuel 16:7) This is comforting, for while we cannot change certain aspects of our physique, we can always improve the kind of person we are.—Ephesians 4:22-24.

Since eating disorders can thrive in a climate of low self-worth, you may need to re-evaluate yourself as a person. True, the Bible tells us not to think more of ourselves than is necessary. (Romans 12:3) But it also tells us



that even a single sparrow has value in God's eyes, adding: "You are worth more than many sparrows." (Luke 12:6, 7) So the Bible can help you to develop healthy self-respect. Appreciate your body, and you will take care of it.—Compare Ephesians 5:29.

But what if you truly do need to lose weight? Perhaps a healthy diet and a program of exercise will help. The Bible does state that "bodily training is beneficial," even if only to a limited degree. (1 Timothy 4:8) But never should you become obsessed with your weight. "Perhaps the wisest course," concluded a survey on body image, "is to get plenty of exercise—and accept yourself the way you are rather than try to mold yourself into a narrowly defined and arbitrary ideal." A 33-year-old woman in the United States found this approach to be helpful. "I've had one simple rule," she says. "Work on improving what you can realistically change, and don't spend time worrying about the rest."

If you take a positive view of life and supplement this with a healthful diet and a reasonable exercise program, likely any pounds that need to come off will.

#### Finding "a True Companion"

After studying a number of bulimics, Professor James Pennebaker concluded that to a large degree, their cycle of eating and purging was forcing these women to adopt secret lives. He says: "Virtually every one spontaneously noted the inordinate amount of time and effort required to conceal her eating habits from her close friends and family. They all were living a lie and hated it."

A major step to recovery, therefore, is to *break the silence*. Both anorexics and bulimics need to talk about the problem. But to whom? A Bible proverb states: "A true companion is loving all the time, and is a brother that is born for when there is distress." (Proverbs 17:17) That "true companion" may be a parent or another mature adult.

#### Laying the Groundwork for Recovery

WHAT should you do if you suspect that your daughter has an eating disorder? Obviously, you cannot ignore the situation. But how do you broach the subject? "Asking her directly sometimes works, but just as often ends with the feeling of having run into a brick wall," observes author Michael Riera.

For this reason, a softer approach may prove to be more effective. "When you speak with your daughter," recommends Riera, "she needs to understand and feel that you are not accusing her of any wrongdoing. If you can create this environment, many adolescents will be fairly honest with you, even somewhat relieved. Some parents have had success with writing letters to their teenager voicing their concern and support. Then, when they have the conversation, the groundwork has already been laid."

Some have also found it necessary to confide in someone who is experienced in treating eating disorders.

Jehovah's Witnesses have an additional resource—congregation elders. These men can be "like a hiding place from the wind and a place of concealment from the rain-storm, like streams of water in a waterless country, like the shadow of a heavy crag in an exhausted land." (Isaiah 32:2) Of course, elders are not doctors, so in addition to their helpful counsel, you may still need medical treatment. Nevertheless, these spiritually qualified men can be a wonderful support to you in your recovery.\*—James 5:14, 15.

Your greatest confidant, however, can be your Creator. The psalmist wrote: "Throw your burden upon Jehovah himself, and he himself will sustain you. Never will he

\* For more information about how to assist anorexics and bulimics, see the article "Helping Those With Eating Disorders," in the February 22, 1992, issue of *Awake!*, and the series "Eating Disorders—What Can Be Done?," in the December 22, 1990, issue.

## A Challenge for Parents

HAVING a child with an eating disorder presents a number of challenges for parents. "You've got to be made of iron or stone," says one father. "You're seeing your own child being destroyed in front of you."

If you have a child with an eating disorder, it is only to be expected that at times you will feel frustrated at her stubborn behavior. But be patient. Never stop showing love. Emily, whose daughter suffered from anorexia, admits that this was not always easy. Nevertheless, she says: "I tried to always keep touching; I tried to hug her; I tried to kiss her.... I thought if I stop being warm to her and stop showing love for her, we'll never find our way back."

One of the best ways to help your child recover from an eating disorder is to communicate with her. In doing so, you may need to do more listening than talking. And resist the urge to interrupt her with statements like, "That's not true" or, "You shouldn't feel that way." Indeed, do not 'stop up your ear from the complaining cry of the lowly one.' (Proverbs 21:13) When there is open communication, a youth will have somewhere to turn during times of distress and may be less likely to resort to unhealthy eating practices.

allow the righteous one to totter." (Psalm 55:22) Yes, Jehovah God has an interest in his earthly children. So never neglect praying to him about your deepest anxieties. Peter admonishes us: "Throw all your anxiety upon him, because he cares for you."—1 Peter 5:7.

### When Hospitalization Is Necessary

Hospitalization is not a cure in itself. However, if a girl has become malnourished from severe anorexia, it may be necessary for her to receive specialized care. Admittedly, it is not easy for a parent to take this step. Consider Emily, whose daughter had to be hospitalized after life became, as Emily puts it, "intolerable for her and for us." She adds:

"Putting her, crying, into the hospital was the hardest thing I have ever gone through, the worst day I have ever had." It was similar with Elaine, who also had to hospitalize a daughter. "I think the worst moment that I can remember," she says, "is when she was in the hospital and refused to eat and they had to tube-feed her. I felt that they had broken her will."

Hospitalization may not be a pleasant thought, but in some cases it may be necessary. For a number of those with eating disorders, it paves the way for recovery. Emily says of her daughter: "She did need to be hospitalized. *It was the hospitalization that did help her to start to get better.*"

## Living Without Eating Disorders

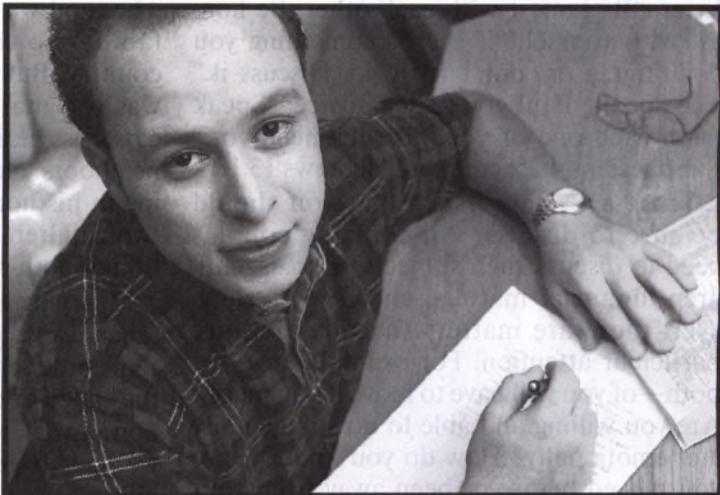
As part of recovery, the anorexic or bulimic needs to learn to live *without* an eating disorder. This can be difficult. Kim, for example, estimates that in her anorexic phase, she lost 40 pounds in ten months. Yet, regaining 35 of those pounds took her nine years! "With great difficulty," Kim says, "I slowly learned to eat normally again, without counting every calorie, measuring my food, eating only 'safe' foods, panicking if I did not know the ingredients in a casserole or dessert, or dining only at restaurants with salad bars."

But recovery for Kim entailed something more. "I learned to recognize and express my feelings with words rather than through actions or food behaviors," she says. "Becoming aware of new ways to face and resolve conflicts with others opened doors to closer relationships with friends and family."

Clearly, recovering from an eating disorder is challenging, but ultimately it is worth the effort. That is what Jean, quoted in the first article in this series, believes. "Returning to disordered eating," she says, "would be like going back into a padded cell after living free for a while."

## YOUNG PEOPLE ASK . . .

**"I had just escorted a group of delegates attending an international convention of Jehovah's Witnesses back to their hotel. I was about to go home, but then another group walked by. So I stopped to talk, and I met Odette. Our paths happened to cross again later in the week. We decided to correspond, and after a couple of years of getting acquainted by letter, we started a courtship."—Tony.**



### How Can I Carry On a Long-Distance Courtship?

THE world has become a smaller place. In recent decades the development of low-cost air travel, a globally linked telephone network, speedy mail delivery, and the Internet has opened up new possibilities in the realm of romance. And in many ways the idea of carrying on a long-distance courtship across hundreds or even thousands of miles might seem appealing—especially if marital prospects at home seem limited.

For some couples, long-distance courtship has proved to be a blessing. "We've been happily married for 16 years," says Tony. Some may even argue that long-distance courtship has the advantage of allowing couples to get to know each other without the blinding power of physical attraction. Whatever its advantages, though, a long-distance romance presents some unique challenges.

#### Getting to Know Each Other

It is best to know as much as you can about someone you are thinking of marrying. How-

ever, as a husband named Frank says from personal experience, "it is not easy to get to know the real person, 'the secret person of the heart.' " (1 Peter 3:4) Doug, another Christian who dated long-distance, admits: "Looking back, I realize that we didn't know each other very well."

Is it really possible to get to know someone who lives hundreds or thousands of miles away? Yes, but it can take extraordinary effort. "We had no money for phone calls, so we wrote letters once a week," says Doug. Joanne and Frank, however, found letter writing to be inadequate. "We wrote letters at first and tried the phone," says Joanne. "Then Frank sent me a small tape recorder. We would record a new tape each week."

#### Honesty, the Only Way

Whatever form of communication you use, it's important to be honest. "If you lie, it

will come out afterward and affect the relationship," observes a Christian wife named Ester. "Be honest with each other. Be honest with yourself. If there's something you don't agree on, don't let it go. Discuss it." The apostle Paul gives good advice: "Speak truth each one of you with his neighbor." —Ephesians 4:25; compare Hebrews 13:18.

What are some issues that you should be sure to discuss? All courting couples need to discuss such subjects as goals, children, financial matters, and health. However, there are matters that may require particular attention. For example, one—or both—of you will have to move if you marry. Are you willing and able to do so, mentally and emotionally? How do you know? Have you moved before or been away from your family for extended periods? Joanne's future husband wanted both of them to serve as volunteer workers at the headquarters of the Watch Tower Society, the publishers of this magazine. "He asked me if I could live in a small room, with little money," recalls Joanne. "We had to talk it out."

If the courtship involves someone from another land, are you willing to adapt to another culture? "Do you already enjoy each other's culture on a day-to-day basis?" Frank asks. "Talk about these big issues early in your relationship. The sooner you find out, the better—before you have too much invested emotionally or financially." Yes, living day by day in another culture is different from being a tourist for a few days. Will you need to learn another language? Will you be able to adjust to big differences in living conditions? On the other hand, could it be that you are enthralled with the culture and perhaps not so much with the person? Such fascination will likely wear off in time. But marriage yokes two people together permanently.—Matthew 19:6.

Tony explains: "A girl I know from another part of the world married someone from

the Caribbean. But she found island life difficult. It was always hot, and she got sick. The food was different, and she missed her family. So they tried living in her home country. But he felt that the life-style there was too materialistic, and he missed the closeness he used to enjoy among family and neighbors. Now they are separated; he is living in his homeland, and she in hers. Their two children miss having the love and attention of both parents."

Marrying a person who is from a long distance away, perhaps another culture, presents other challenges. Are you prepared for the added expense of travel and communication? Lydia recalls: "Phil used to joke that we had to get married because his phone bills were so high, but now we have to pay for my phone calls to my mother!" What if children come along? Some grow up knowing little about their own relatives, unable even to talk to them on the phone because of language differences! This is not to say that such problems are insurmountable. But one should calculate the expense of entering into such a marriage.—Compare Luke 14:28.

#### **What Is He (or She) Really Like?**

How can you tell if your friend is really being open and candid? "Every good tree produces fine fruit," states Matthew 7:17. So what are his works? Do his actions back up what he says? Does his past support his professed goals for the future? "The first things we found out about each other were our spiritual goals," explains Ester. "He had been serving as a full-time evangelizer for eight years, and that gave me confidence that he was truthful about wanting to continue."

But suppose the person you are courting seems evasive. Don't drop the matter and just hope for the best. Probe deeper! Ask WHY? A proverb says: "Counsel in the heart of a man is as deep waters, but the man of discernment is one that will draw it up." (Prov-



**Be sure to discuss such issues as goals, children, and financial matters early in your relationship**

erbs 20:5) "Anyone inexperienced puts faith in every word, but the shrewd one considers his steps," warns another proverb.—Proverbs 14:15.

#### **Face-to-Face**

Still, you can learn only so much about a person by letter or phone. Interestingly, the apostle John wrote a number of letters to his Christian brothers. While these letters did much to strengthen the bond of affection between them, John said: "Although I have many things to write you, I do not desire to do so with paper and ink, but I am hoping to come to you and to speak with you face to face." (2 John 12) Similarly, nothing beats spending time with someone *in person*. It might even be practical for one of you to make a temporary move so that you can be closer to each other. This will also allow the one who moves to experience the climate and living conditions of what might become his or her new home.

How can you make the most of your time together? Do things that reveal each other's qualities. Study God's Word together. Observe each other participating at congregation meetings and in the ministry. Do regular household chores together, such as cleaning and shopping. Seeing how the other person

behaves under the stress of a busy schedule can be very enlightening.\*

Time should also be spent with potential in-laws. Seek to build a good relationship with them. After all, if you two marry, they will become your family. Do you know them? Do you get along? Joanne advises: "If at all possible, it is good for both families to meet." Tony further observes: "The way your friend treats his or her own family is the way he or she will treat you."

Whether courting face-to-face or by phone and letter, avoid being hasty in your decisions. (Proverbs 21:5) If it becomes apparent that a marriage between the two of you simply would not work, then it would be the course of wisdom to discuss breaking off the courtship. (Proverbs 22:3) On the other hand, it may simply be that more time is needed for open, honest communication.

Long-distance courtship can be difficult, but it can also be rewarding. In any event, it is serious business. Take your time. Get to know each other. Then, if you do decide to marry, your courtship will be a time you treasure, not regret.

\* For further information on courtship, see the book *Questions Young People Ask—Answers That Work*, pages 255-60, published by the Watchtower Bible and Tract Society of New York, Inc.



# LIONS

## Africa's Majestic Maned Cats

BY "AWAKE!" CORRESPONDENT IN KENYA

IT IS sunrise on the Serengeti Plain of Africa. In the cool morning air, we sit in our Land Rover and watch a pride of lionesses with their cubs. Their tawny coats are sleek and golden, blending beautifully with the long, dry grass. The young cubs are boisterous and full of energy. They spring and play around the large bodies of the females, who seem to take little notice of their clownish antics.

Suddenly the pride freeze. All eyes turn, staring into the distance. From our elevated viewpoint, we follow the line of their gaze and discover the object of their attention. The dawn light reveals the magnificent form of a huge male lion. Our eyes meet his as he stares at us. We feel our bodies shiver, not from the morning chill, but from the realization that we are the object of his glare. He is fearsome, yet beautiful, in appearance. A great golden mane streaked with black frames his massive head. His large eyes are amber in color and alert. However, his family draws his attention, and slowly he turns his gaze to them and moves in their direction.

His stride is stately, even regal. Without giving us a second glance, he passes directly in front of our vehicle and approaches the females and their cubs. They all rise to meet him and one by one press their faces against his rugged muzzle in a typical feline cheek-rub greeting. Moving into the midst of the pride, the male flops down as if ex-



hausted by his stroll and rolls onto his back. His lethargy is contagious, and soon the whole pride sleep lightly in the first rays of the warm morning sun. We see before us a picture of peace and contentment framed within the golden, windblown grasses of the open plain.

### A Creature of Intrigue and Fascination

Perhaps no animal has excited the imagination of man more than the lion. Long ago, African artists adorned rock faces with painted images of lions hunting their prey. Ancient palaces and temples were ornamented with huge stone statues of full-maned lions. Today, people flock to zoos to see these fascinating cats. The lion has been lionized in books and films, such as *Born Free*, a true account of an orphaned lion cub raised in captivity and finally set free. And the lion has been villainized in stories—part fable, part fact—as a malicious man-eater. No wonder the lion remains a creature of intrigue and fascination!

Lions can be extremely fierce and, occasionally, as gentle and playful as kittens. They purr quietly when contented yet can utter a mighty roar that is audible for five miles. At times they seem to be lazy and lethargic, but they have the ability to move with surprising speed. Man has immortalized the lion for its courage, and a brave person is said to be lionhearted.

### **Simba\*—A Sociable Cat**

Lions are among the most social of all the cats. They thrive in large family units called prides, which can number from just a few members to over 30. The pride consists of a

group of lionesses who may be closely related. They live, hunt, and give birth together. This close bond, which may last a lifetime, provides the foundation of the lion family unit and ensures its survival.

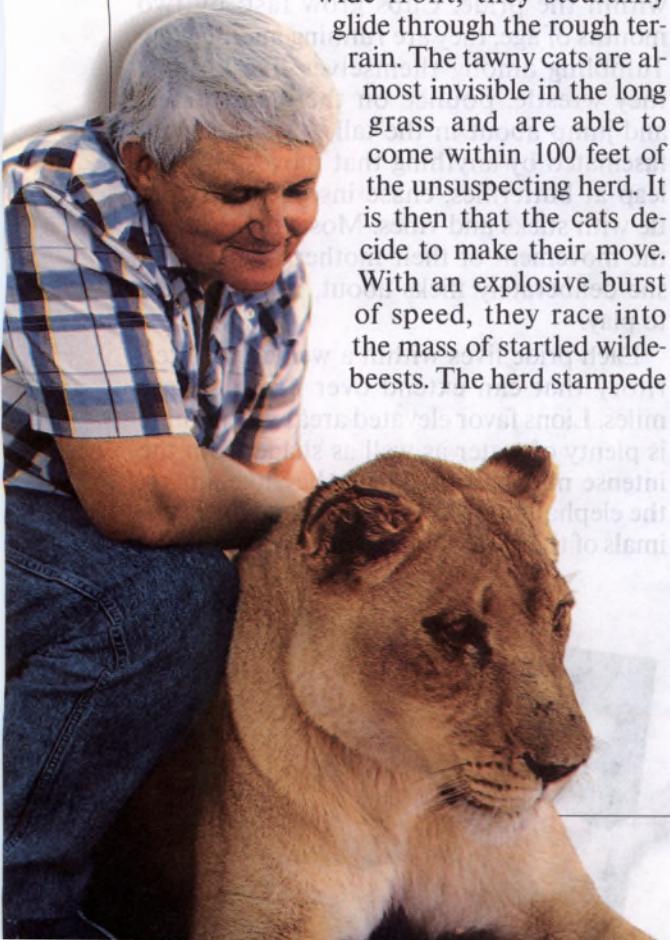
Each pride has one or more fully grown male lions patrolling and scent-marking the pride's territory. From the tip of their black noses to the end of their tufted tails, these magnificent beasts can measure over ten feet in length, and they can weigh more than 500 pounds. Although the males dominate the pride, it is the females that exercise leadership. The lionesses are the ones that usually initiate activity, such as moving to a shaded area or starting a hunt.

Lionesses normally give birth every two years. Young lions are born totally helpless. Rearing cubs is a community project, and all the females will protect and nurse the young within the pride. Cubs grow fast; by two months of age, they are running and playing. Tumbling among themselves like kittens, they wrestle, pounce on their playmates, and jump about in the tall grass. They are fascinated by anything that moves and will leap at butterflies, chase insects, and wrestle with sticks and vines. Most irresistible is the movement of their mother's tail, which she deliberately flicks about, inviting them to play.

Each pride lives within a well-defined territory that can extend over many square miles. Lions favor elevated areas where there is plenty of water as well as shade from the intense midday sun. There they live among the elephants, giraffes, buffalo, and other animals of the plain. The life of a lion is divided

\* Simba is Swahili for "lion."





between long hours of sleeping and short periods of hunting and mating. The fact is, lions can be found resting, sleeping, or sitting an incredible 20 hours a day. Sound asleep, they look peaceful and tame. However, do not be deceived—the lion is one of the fiercest of all the wild creatures!

### The Hunter

In the late afternoon, the sunbaked grasslands begin to cool. The three lionesses of the pride that we are watching begin to stir from their midday siesta. Driven by hunger, the cats start to move about, sniffing the air as they look out across the yellowing grasslands. It is the height of the wildebeest migration, and tens of thousands of these ungainly antelope graze peacefully to the south of us. The three cats now move in that direction. Fanning out on a wide front, they stealthily

glide through the rough terrain. The tawny cats are almost invisible in the long grass and are able to come within 100 feet of the unsuspecting herd. It is then that the cats decide to make their move. With an explosive burst of speed, they race into the mass of startled wildebeests. The herd stampede

in all directions, the wild-eyed creatures racing for their lives. Hundreds of pounding hooves pulverize the earth, kicking up a cloud of red dust. As the dust blows away, we see the three lionesses standing alone, panting heavily. Their prey has eluded them. Perhaps another opportunity to hunt will come tonight, perhaps not. As agile and quick as they are, lions are only successful 30 percent of the time when hunting. Starvation is thus one of the greatest threats that lions face.

The strength of a full-grown lion is remarkable. Hunting in prides, they have been known to pull down and kill animals weighing over 3,000 pounds. In the initial chase, lions can reach speeds of up to 36 miles an hour, but they cannot sustain that speed for long. Because of this, they employ stalk-and-ambush techniques to obtain their meals. Lionesses do 90 percent of the hunting, but it is the larger males that usually get the lion's share when the meal starts. When game is scarce, lions are sometimes so hungry that they will drive their own cubs from the kill.

### The Hunted

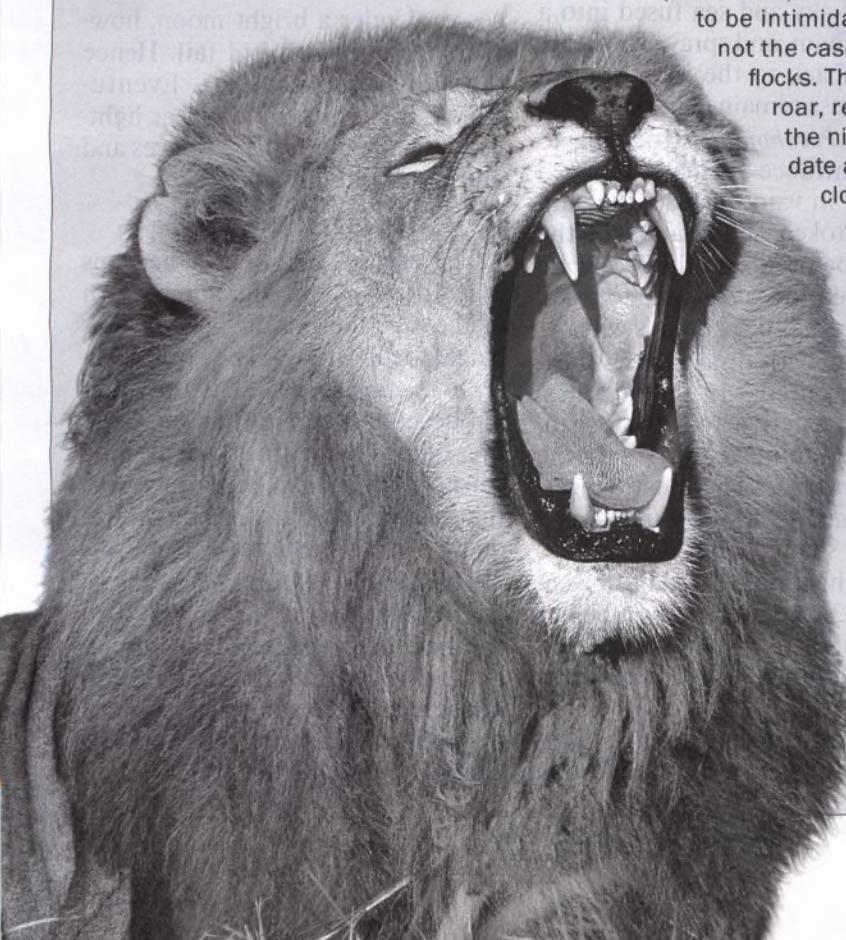
Long ago the majestic lion roamed the entire African continent and some parts of Asia, Europe, India, and Palestine. Being a hunter, it lives in competition with man. Threatening livestock and harming people, the lion became a creature to be shot on sight. Exploding human populations have greatly reduced the lion's habitat. Outside Africa, there are only a few hundred lions surviving in the wild today. Now lions are safe from man only within the bounds of protected areas and wildlife parks.

Happily, there are changes in store for this magnificent beast. The Bible describes a future time when the lion will live at peace with humans. (Isaiah 11:6-9) Our loving Creator will soon make this a reality. At that time Africa's majestic maned cat will live in harmony and peace with the rest of creation.

# When the Lion ROARS

LIONS are known for their unique vocal ability to boom out a loud roar that can be heard for miles. The roar of the lion has been regarded as one of "the most impressive natural sounds." Lions usually roar during the hours of darkness and at dawn. Both male and female lions engage in roaring, and sometimes a whole pride will lift up their voices together in a community roar.

Scientists who study lions suggest that roaring accomplishes several things. Male lions will roar to advertise their territorial boundaries and, as an expression of aggression, to warn other male lions who may enter their territory. Fittingly, the Bible referred to the aggressive, proud, and greedy Assyrian and Babylonian rulers as roaring "maned young lions" that violently opposed and devoured God's people.—Isaiah 5:29; Jeremiah 50:17.



Roaring allows pride members to locate one another when separated by distance or darkness. After a kill, this vocalization alerts the other pride members to the location of the waiting meal. Referring to this characteristic, the Bible observes: "Will a young maned lion give forth its voice from its hiding place if it has caught nothing at all?"—Amos 3:4.

Surprisingly, when hunting wild animals, lions do not use roaring as a hunting strategy to scare their prey. In his book *The Behavior Guide to African Mammals*, Richard Estes observes that there is "no indication that lions deliberately roar to drive prey into an ambush (in my experience prey species normally ignore lion roars)."

Why, then, does the Bible refer to Satan as a 'roaring lion that seeks to devour someone'? (1 Peter 5:8) Although wild animals do not seem to be intimidated by the lion's roar, this is not the case with man and his domestic flocks. The terrifying sound of the lion's roar, resonating in the darkness of the night, would frighten and intimidate anyone not protected behind a closed door. Long ago it was accurately observed: "There is a lion that has roared! Who will not be afraid?"—Amos 3:8.

Satan is skillful in the use of fear to intimidate people into submission. Thankfully, God's people have a powerful ally. With strong faith in Jehovah's backing, they can successfully resist this powerful "roaring lion." Christians are encouraged to 'take their stand against him, solid in the faith.'—1 Peter 5:9.

# A LIGHT THAT SAVES LIVES

**I**T WAS an arduous five-week Atlantic crossing in the late 19th century. The passengers were expecting to see land any day. Then a light appeared, a lonely star on the horizon. But it was not a star; it was a lighthouse. "At the sight of the light, we threw ourselves on our knees and gave thanks to God," a passenger later said. The light guided them safely to their destination. Not all those early voyages, however, ended so well.

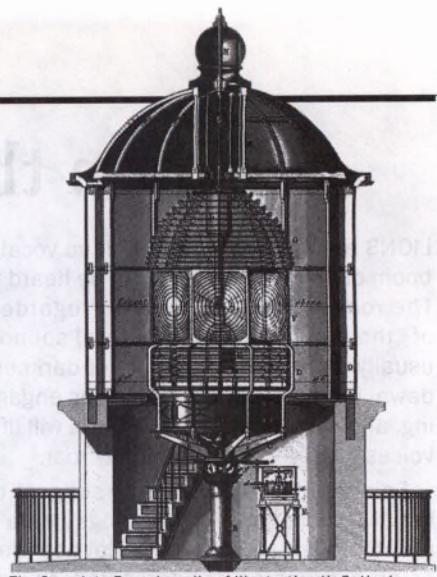
December 22, 1839, was a fair, sunny day on the New England coast of North America. The keeper of the lighthouse at Plum Island, Massachusetts, thought he could safely leave the island in his little rowboat, take his wife shopping, and be back before dark. But while they were away, a wind began to blow. A storm was coming, and fast. Soon sky and sea fused into a gray, howling mass of rain, foam, and spray. The keeper tried desperately to get back to the island but in vain. That night the lighthouse remained dark.

Near midnight, the ship *Pocahontas*, struggling to find the river and harbor entrance normally signaled by the lighthouse, searched in vain. Instead, the ship hit a sandbar. Its back was broken, and it sank with the entire crew on board. Just before dawn the *Richmond Packer*, heading for the same port, also came to grief, but only one life was lost, that of the captain's wife.

Maritime history is replete with disasters that beacon lights might have prevented. "In olden times, many a ship was navigated safely across the ocean, only to be wrecked as it tried to make port," says the book *America's Maritime Heritage*. "The most dangerous part of an ocean trip was the last few miles, as a ship approached and finally sighted land."

According to lighthouse historian D. Alan Stevenson, between 1793 and 1833, the average number of ships wrecked annually on British shores increased from 550 to 800. More lighthouses were needed, as were better lights.

In some countries, including England and the United States, sailing was made even more dangerous



The Complete Encyclopedia of Illustration/J. G. Heck

by the infamous moon cussers, villains who set up false lights to lure ships onto rocks, only to plunder them there. Survivors were often killed; moon cussers wanted no witnesses. Under a bright moon, however, their ploy would fail. Hence the name moon cussers. Eventually, though, more and better lighthouses helped put these thieves and murderers out of business.

## The First Beacons

The earliest mention of beacons is in the *Iliad*. "At the going down of the sun the line of beacon fires blazes forth," it says. The book *Keepers of the Lights* says that "the original beacons were nothing but huge fires of logs, sometimes kept in stone cairns, and later in big iron cages, that were allowed to burn out at frequent intervals with tragic results."

Then, about 300 B.C.E., on the island of Pharos, at the entrance to the harbor of Alexandria, Egypt, arose the world's first true lighthouse, the Pharos of Alexandria. A magnificent masonry structure between 350 and 400 feet high (about

40 stories), it was the tallest lighthouse ever built. One of the Seven Wonders of the World, it lasted about 1,600 years until it was toppled, probably by an earthquake.

The Romans erected at least 30 lighthouses, from the Black Sea to the Atlantic. But when the empire fell, commerce slowed and lighthouses fell into darkness and disrepair. Construction began again about 1100. A celebrated lighthouse of the new era was the Lanterna of Genoa, whose keeper in 1449 was Antonio Columbo, uncle of explorer Christopher Columbus.

The first lighthouse erected in the open sea was a wooden one built by Henry Winstanley in 1699 on the treacherous Eddystone Rocks off Plymouth, England. He was proud of his accomplishment. While fishing from his lighthouse, says the video documentary *Guardians of the Night*, Winstanley would say: "Rise up, sea. Come and put my work to the test." One day in 1703, the sea obeyed. Winstanley and his lighthouse vanished without a trace.

Commemorating the friendship of the peoples of the United States and France, the 302-foot-high Statue of Liberty, in New York Harbor, doubled for some time as a navigational aid. For 16 years three keepers took turns keeping the flames bright in her torch. "From her beacon-hand glows world-wide welcome," says a sonnet at her pedestal.

#### **From Flames to Xenon Flashtubes**

Coal, candles—even candelabras—and oil eventually replaced wood as the illuminant in lighthous-

## **Two Courageous Women**

The story of lighthouses includes accounts of remarkable courage and dedication, often on the part of women. Grace Darling (1815-42) risked her life to save nine survivors of a shipwreck near her father's lighthouse at the Farne Islands, off the northeast coast of England. At her insistence, she and her father rowed through a perilous sea to the wreck, put the survivors in the dinghy, rowed back to the lighthouse, and cared for them until help arrived. A memorial has been erected in her memory.

Abigail Burgess was the 17-year-old daughter of the keeper of the Matinicus Rock lighthouse, off the coast of Maine in North America. One day in January 1857, her father had to leave the lighthouse but then could not get back for four weeks because of bad weather. Abbie, as she was called, took charge. She also tended her ill mother and supervised her three siblings, who were too young to help with lighthouse duties. Abbie writes: "Though at times greatly exhausted with my labors [keeping a light before the advent of electricity was hard work], not once did the lights fail. Under God I was able to perform all my accustomed duties as well as my father's." The following winter Abbie once again had to take charge. This time she and her family were reduced to a daily allowance of one egg and one cup of cornmeal. But the light never failed.

es. Attempts were made to use reflectors to focus the light, but smoke and soot from the fire tended to blacken them. In 1782, however, Swiss scientist Aimé Argand invented an oil lamp that directed air upward through the middle of a cylindrical wick and out through a glass chimney. Once they would stay clean, parabolic reflectors (shaped like the mirrors in car headlights) became popular in lighthouses. A good reflector increased the light intensity some 350 times.

Another big stride came in 1815 when French physicist Augustin-Jean Fresnel invented the most efficient lens ever to be used in lighthouses. Prior to Fresnel's invention, the best mirror systems—using Argand lamps, which remained popular for over 100 years—produced about 20,000 candlepower.\* Fresnel lenses boosted this to 80,000—about the same power as a modern-day car headlight—and that with just a burning wick!

\* Now replaced by the candela. Previously, the international candle, measured in candlepower, was the luminous intensity of a light in a given direction as compared to that of a standard candle.

Pressurized oil burners were invented in 1901, and it was not long before Fresnel units emitted up to one million candlepower. About the same time, acetylene gas came into use and profoundly affected lighthouse technology and automation, thanks largely to the work of Nils Gustaf Dalén, of Sweden. Dalén's automatic sun valve—an off and on switch that regulates acetylene gas flow by responding to sunlight—earned him the Nobel Prize for Physics in 1912. Electric filament lamps became popular in the 1920's and remain the chief illuminant to this day. When mated with a Fresnel lens, a bulb of just 250 watts can emit several hundred thousand candlepower. Nowadays, the most powerful lighthouse in the world, a lighthouse in France, can crack open the night sky with a blinding shaft of 500 million candlepower.

A recent innovation is the xenon flashtube. It gives off a brilliant flash just millionths of a second long. Because the light pulse is so brief and intense, it stands out against a background of other lights.

### Floating Lighthouses

Floating lighthouses, or lightships, were put to work where it was impractical to build a tower. Like towers, though, lightships have a long history. The first was a Roman galley commissioned in Julius Caesar's time. High on the mast, an iron brazier of burning charcoal lit up the night sky—and dropped embers onto the sweating bodies of the slave oarsmen chained to their stations below.

The first latter-day lightship went to work in 1732 in the Thames estuary, near London. Thereafter, the number of lightships increased. For many years ships entering and leaving New York Harbor were guided by the lightship *Ambrose*. In recent years, however, lightships have given way to automatic light buoys and light towers, which are metal structures that resemble offshore oil wells.

### When Fog and Storm Smother Lights

Even the most powerful light is hampered when there is heavy fog and rain—times when beacons are needed the most! A solution, although an imperfect one, is sound—a very loud and regular sound. For this reason, many lighthouses are equipped with powerful acoustic devices such as bells, foghorns, sirens and, for

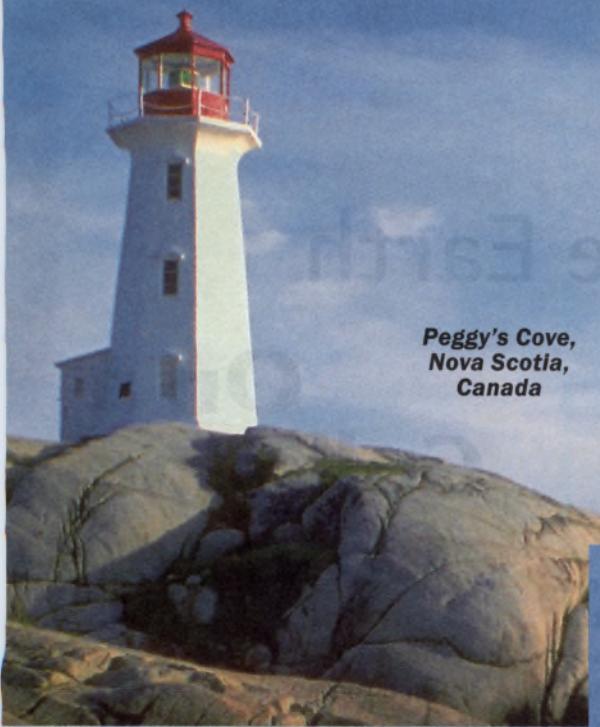
a time, even cannons! In fact, some lighthouses used cannons as late as the 1970's.

Sound waves, however, are subject to the vagaries of the atmosphere. Differences in temperature and humidity in the layers of air above the water can play tricks with sound, sometimes bending it upward, sometimes downward. Additionally, just as a pebble can be made to bounce on a pond, so a blast of sound can bounce right over a ship and not even be heard! But problems aside, acoustic signals can usually be heard miles away.

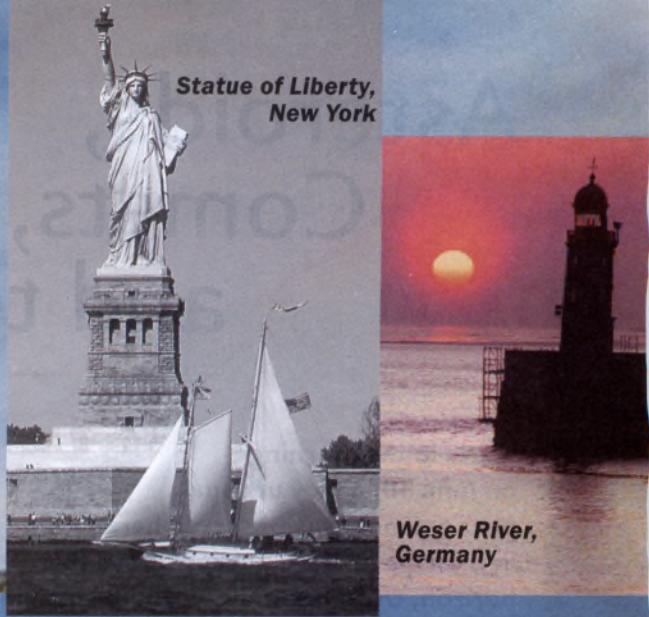
### The End of an Era

As automation arrived, lighthouse keepers became redundant. Radar, radio, sonar, and satellite navigation have now overtaken even the lighthouse itself, and many have been decommissioned. But we cannot seem to let them go. To many people, lighthouses are a symbol of light and hope in a dark world, and they continue to inspire photographer, artist, and poet alike. In an effort to preserve these handsome old buildings, lighthouse societies have sprung up around the world.

Some lighthouses now offer unique accommodations for visitors keen to sample the life of a lighthouse keeper, albeit a more pampered one. Other visitors simply want to enjoy solitude—to hear nothing but the lonely cry of gulls and the rumble of the surf. In certain parts of the world, lighthouses also furnish an excellent vantage point for watching whales, birds, and seals. The keepers at Alexandria and Christopher Columbus' uncle at Genoa probably spent their idle moments doing much the same.



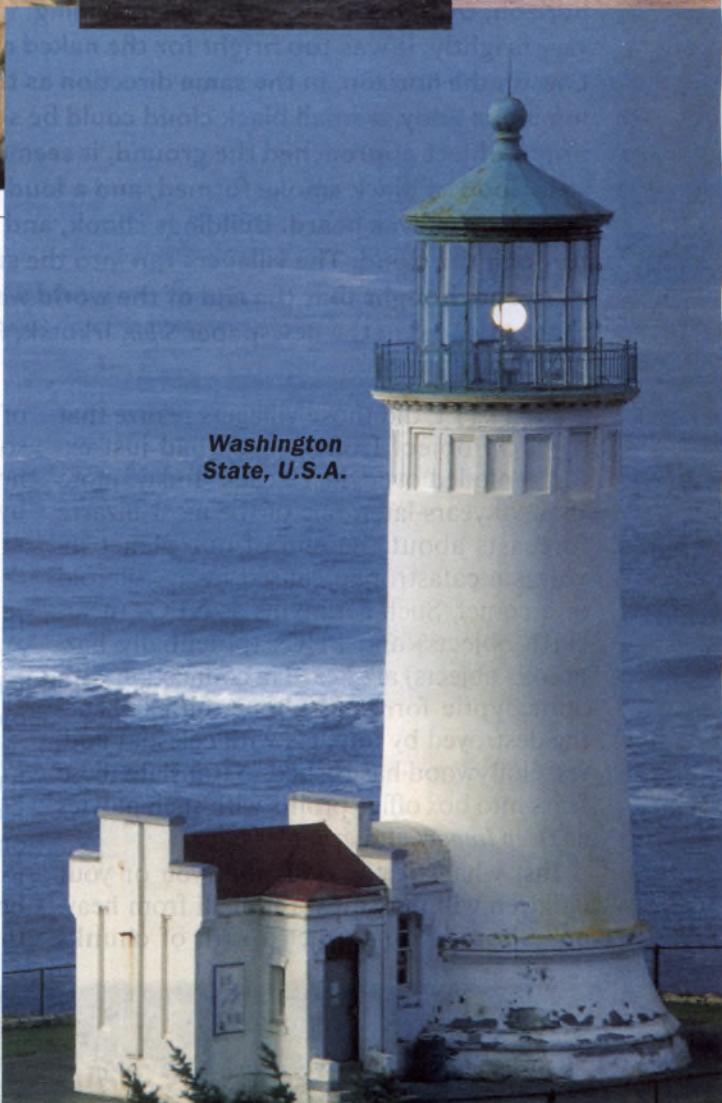
Peggy's Cove,  
Nova Scotia,  
Canada



Statue of Liberty,  
New York



Weser River,  
Germany



Washington  
State, U.S.A.



South Street Seaport Museum

## The Fresnel Lens

The Fresnel lens is actually a compound lens, or lens panel, with a central lens surrounded by curved glass prisms. Fresnel lens panels can be joined together to form a glass barrel that completely encircles the light source. Each panel concentrates light into a horizontal pencil beam. More panels mean more beams of light, like spokes radiating from the hub of a wheel. As the barrel rotates around the light source, the spokes of light whip around the horizon. The number of beams, the time interval between beams, and even their color are just some of the factors that give each lighthouse a unique light signature, or characteristic. Ships carry a light list so that mariners can identify each lighthouse en route.

# Asteroids, Comets, and the Earth

'Early in the morning on June 30, a very unusual phenomenon was observed here in a village in Siberia. High above the horizon, the peasants saw an object shining very brightly; it was too bright for the naked eye. Low on the horizon, in the same direction as the luminous body, a small black cloud could be seen. When the bright object approached the ground, it seemed to be crushed to dust. In its place a vast cloud of black smoke formed, and a loud explosion, as if from an avalanche of large stones, was heard. Buildings shook, and a forked tongue of flame burst upward through the cloud. The villagers ran into the street in terror. Old women wept; everyone thought that the end of the world was upon them.'—Summary of a report that appeared in the newspaper *Sibir*, Irkutsk, Russia, on July 2, 1908.

LITTLE did those villagers realize that an object from heaven had just exploded over their heads. Today, more than 90 years later, one of the most bizarre forecasts about the end of our planet involves a catastrophe caused by an asteroid or a comet. Such acronyms as NEOs (near-earth objects) and PHOs (potentially hazardous objects) are heard in connection with apocalyptic forecasts about the earth being destroyed by impacts with celestial bodies. Hollywood has rushed to translate these fears into box office profits with such movies as *Deep Impact* and *Armageddon*.

Just what are the odds that you or your children will perish by a fireball from heaven? Should you expect a rain of chunks

## On a Collision Course?

of iron and ice to bombard your backyard soon? If you live near a coastline, will your home be leveled by a huge tidal wave caused by a rogue asteroid plunging into the sea?

### Orbiting Amid Planetary Debris

Our solar system consists of much more than the sun, nine planets, and their moons. Comets (conglomerates of ice and dust), asteroids (small or minor planets), and meteoroids (mostly fragments of asteroids) are also orbiting within the solar system. Scientists have known for a long time that earth is subject to bombardment from space. We have only to look at the moon's battered landscape to realize that we live in a cluttered neighborhood. Were it not for the atmosphere and the continuous recycling of earth's surface

by plate tectonics and erosion, our planet's face would be as cratered as the moon's.

Scientists estimate that as many as 200 million meteors are visible in the earth's atmosphere every day. Most of the objects that enter the atmosphere are small and burn up virtually unnoticed. Some of these objects, however, survive the fiery heat of entry and are slowed down by air friction to a speed of about 200 miles an hour. What is left of them hits the ground as meteorites. Since most of them fall into oceans or uninhabited tracts of land, rarely have they caused harm to people. It is estimated that the objects that enter our atmosphere add hundreds of tons daily to the earth's weight.

Additionally, astronomers estimate that there may be about 2,000 asteroids larger than six tenths of a mile in length that either cross or come close to the earth's orbit. They have discovered and tracked only about 200 of them. Also, there are an estimated one million asteroids larger than 160 feet across that come dangerously near earth's orbit. Asteroids of that size can reach the ground and cause damage. Such a comparatively small projectile packs about ten megatons of energy—equal to a large nuclear bomb. While earth's atmosphere can protect us from smaller impacts, it cannot stop those with ten megatons or more of energy. Some researchers claim that, statistically speaking, we can expect a ten-megaton impact about once a century on an average. According to some estimates, the impact frequency of objects close to a mile across is once in 100,000 years.

### Telltale Craters, Explosions, and Collisions

It is not difficult to believe that our planet has been hit by large objects raining down from space in the past. Proof of these impacts can be found in the more than 150 discovered craters that pock-

mark earth's surface. Some of them are clearly visible, others can be seen only from aircraft or satellites, and still others have long been buried or are on the ocean floor.

One of the most famous of these craters, known as Chicxulub, produced a scar on earth's surface 110 miles in diameter. Located near the northern tip of Mexico's Yucatán Peninsula, this huge crater is believed to be the impact site of a six-mile-wide comet or asteroid. Some claim that the climate changes triggered by this impact caused the extinction of the dinosaurs and of other land and sea animals.

In Arizona, U.S.A., an iron meteorite gouged out the spectacular Meteor Crater—a hole nearly 4,000 feet across and 600 feet deep. What would the casualties be if a meteorite like that hit a city? A popular display at the American Museum of Natural History, in New York City, shows that if such an object were to hit Manhattan, that crowded borough would be completely destroyed.

On June 30, 1908, an asteroid or a chunk of a comet estimated to be less than 300 feet across roared into the atmosphere and exploded some five miles above the largely unpopulated Tunguska region of Siberia, as mentioned in the introduction. The blast, estimated at 15 megatons, devastated an area of 800 square miles, knocking down trees, starting fires, and killing reindeer. How many people would have died if ground zero of that explosion had been a densely populated area?

NASA photo

In July 1994, telescopes all over the world focused on Jupiter as fragments of the comet Shoemaker-Levy 9 crashed into that planet. The temporary scars formed on Jupiter will remain deeply engraved on the minds of those who saw the collisions firsthand. Watching Jupiter suffer hit after hit left experts and laypersons alike wondering what would happen if, instead, the earth had been the target of the comet.

### Disaster Scenarios

With trepidation, scientists have considered the dire consequences that a comet or asteroid impact would have on our planet. This is how they envision the immediate results of a major collision. First would come an explosive plume of rock and dust. The falling debris would produce a meteor shower that would turn the sky red-hot and ignite forests and grasslands, killing most land life. Dust remaining suspended in the atmosphere for a longer period would block sunlight, causing temperatures to plummet and halting photosynthesis on the darkened surface below. Suppression of photosynthesis would also lead to a breakdown in the ocean-

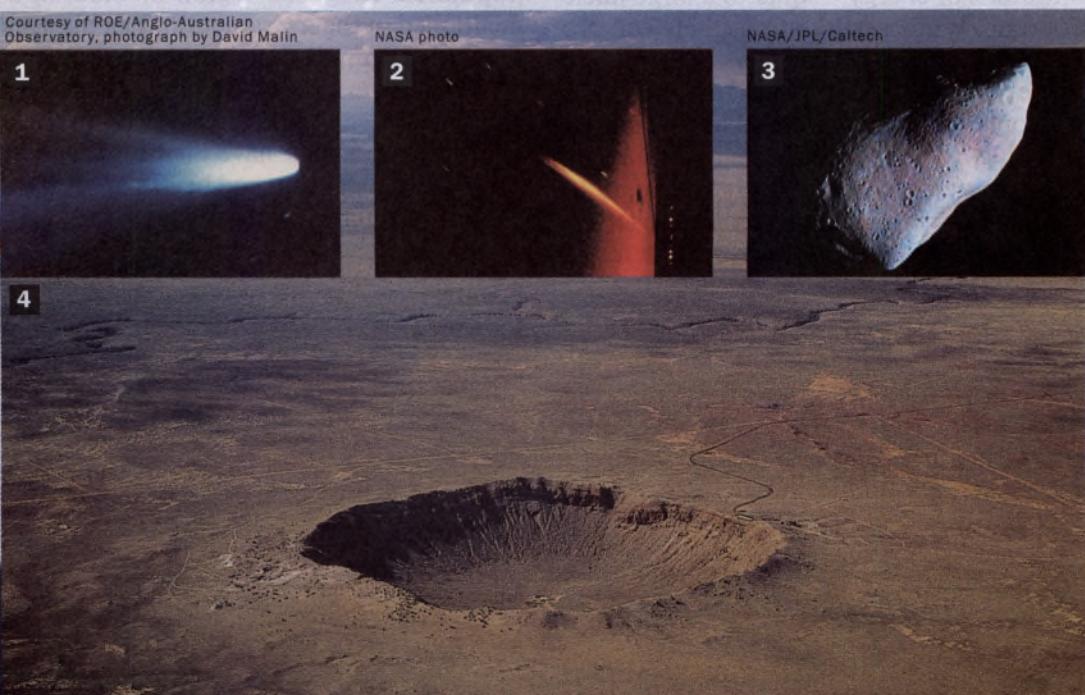
ic food chain, condemning to death most marine creatures. According to this scenario, the environmental disaster would be rounded out by global acid rain and the destruction of the ozone layer.

Were such an asteroid to hit the ocean, it would produce tidal waves, tsunamis, with tremendous potential for destruction. Tsunamis would travel much farther from the impact site than the initial shock wave and would produce widespread destruction in coastal areas thousands of miles away. Says astronomer Jack Hills: "Where cities stood, there would be only mud flats."

However, one must be careful about such assertions. Much of this theorizing is mere speculation. Obviously, nobody has seen or studied an asteroid colliding with the earth. Also, today's hype-crazy media are quick to come up with sensational headlines, based on incomplete or even inaccurate informa-

1. *Halley's Comet*
2. *Comet Ikeya-Seki*
3. *Asteroid 951 Gaspra*
4. *Meteor Crater—a hole nearly 4,000 feet across and 600 feet deep*

▼ Photo by D. J. Roddy and K. Zeller, U.S. Geological Survey



Courtesy of ROE/Anglo-Australian Observatory, photograph by David Malin

NASA photo

NASA/JPL/Caltech

## The Case of 1997 XF11

On March 12, 1998, bad news flashed around the globe: A mile-wide asteroid was headed for earth and was due to arrive on October 26, 2028, "a Thursday." The asteroid, dubbed 1997 XF11, was discovered on December 6, 1997, by astronomer Jim Scotti, of the University of Arizona's Spacewatch group. Using past data and newer observations, scientists with the Harvard-Smithsonian Center for Astrophysics released information that was used by some to predict that the asteroid's orbit would likely place it about

30,000 miles from earth—a hairbreadth by astronomical standards, or a "miss distance of zero." Television screens were filled with terrifying simulations of an asteroid slamming into earth. Then, barely a day later, the danger was gone. New data and calculations showed that the asteroid would miss the earth by 600,000 miles. That was still closer than any previously observed asteroid of that size, but it was a safe distance. The media quickly came up with such headlines as "Okay, so They Were a Little Off."

tion. (See the box above.) Actually, it is said that the chance of being killed by an object falling from the sky is significantly less than the chance of being killed in a car accident.

### What Should Be Done?

Many experts believe that the best strategy for avoiding disaster by an approaching comet or asteroid would be to launch a rocket to intercept the invader and, at least, change its course. If the asteroid is small and is detected many years before its calculated impact, this blow might be sufficient.

However, for a larger object that might collide with the earth, some scientists propose the use of nuclear weapons. In such a case, it is believed that a carefully placed nuclear blast would nudge the asteroid into a safer orbit, turning a hit into a miss. The size of the asteroid and its proximity to the earth would determine the size of the nuclear explosion that would be needed.

The problem is that none of these possible defensive measures can be effective without adequate advance warning. Such astronomy groups as Spacewatch and Near Earth Asteroid Tracking are exclusively dedicated

to asteroid hunting. Many people feel that more should be done in this direction.

Admittedly, imperfect humans have limited knowledge regarding the locations and movements of these celestial bodies. But there is no need to become extremely concerned or excessively fearful over threats that the future of life on earth is in doubt. The safest guarantee that no asteroid or comet will ever be permitted to destroy all life on earth comes from the Creator of the universe, Jehovah God.\* The Bible assures us: "The righteous themselves will possess the earth, and they will reside forever upon it."—Psalm 37:29; Isaiah 45:18.

\* For a further discussion of the Bible's viewpoint on this subject, see pages 22-3 of the December 8, 1998, issue of *Awake!*

### IN OUR NEXT ISSUE

**Does God Really Exist?**

**The Kind of Clothes We Wear  
—Does It Really Matter?**

**The Year 2000  
—Will Computer Crashes Affect You?**

## WATCHING THE WORLD

### Child Abuse Common

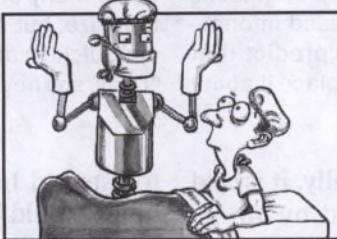
"A new [U.S.] study of adolescent boys' health has found that more than 1 in 8 high-school-age boys said they had been physically or sexually abused," reports *The New York Times*. The study found that "the physical abuse of boys was far more common than sexual abuse, and that two-thirds of the physical abuse was by a family member and took place in the home." Asian-American boys claimed the highest incidence of sexual abuse, with 9 percent saying that they had been abused. Among Hispanic boys, 7 percent said that they had been abused sexually, while 3 percent of blacks and whites reported sexual abuse. The questionnaire did not define abuse. It simply asked if the respondent had ever been abused physically or sexually.

### The "Ultimate Ancestor"?

Bishops from throughout Asia recently gathered at Vatican City to discuss ways to spread Catholicism to Asian lands. "In most Asian countries, Christianity is a Western religion that came with the colonizing forces," says Monsignor Oswald Gomis of Sri Lanka. The challenge, therefore, is to "present Jesus in Asian terms," reports the Associated Press. "The bishops talked about adapting the Roman church to local customs and languages and vice versa." One example given is the practice of ancestor worship. To appeal

to those who practice this ancient custom, Monsignor John Tong Hon of Hong Kong suggested that Catholics gradually introduce the concept of the "Christian" god as the "ultimate ancestor."

### Robo-Surgeon



Two surgeons in a Paris hospital have performed the first successful open-heart surgery using a computer-controlled robot, reports the French newspaper *Le Figaro*. Six operations were performed, including a coronary bypass. The method involves operating through a one-and-a-half-inch incision. Sitting at a console several feet from the patient, the surgeons look inside the patient's body by means of a camera and use two joysticks to direct the robot's arm movements. Because the computer reduces the surgeons' movements by three to five times, the surgery is more precise and less invasive. Another advantage is that the patient experiences less pain during recovery.

### Traffic Fatalities Rising

Every year, over 500,000 people are killed on the world's highways, and worldwide, traffic fatalities are on the in-

crease, reports *Fleet Maintenance & Safety Report*. What are your chances of being involved in a serious traffic accident? According to the report, "in 'motorized' countries, at least 1 in 20 persons is killed or injured in a highway crash every year and 1 in 2 persons is hospitalized at least once in their lifetime for a traffic injury."

### Unsanitary Surfaces

As unlikely as it may seem, the toilet seat in your home may be more sanitary than the cutting board in your kitchen. That is what researchers from the University of Arizona concluded after spending 30 weeks monitoring the bacteria found in 15 homes. The team took samples from 14 sites in each home, including tap handles, sink surfaces, cutting boards, dishcloths, and toilet seats. Their findings? "Researchers found a million times as many bacteria in the fluid wrung from dishcloths as on toilet seats," says *New Scientist* magazine. "Even chopping boards hosted three times as many bacteria." A spokesperson for the study, Pat Rusin, theorized that "toilet seats are simply too dry to support a thriving population of bacteria, which tend to prefer damp environments," reports the magazine. To improve hygiene, Rusin recommends cleaning dishcloths weekly. "Simply add one cup of bleach to a sinkful of water, throw in the dishcloth and let it soak for 10 minutes before letting it drain," she says.

### Cutting the Risk of Kidney Stones

Researchers tracking the diets of more than 80,000 nurses in the United States between 1986 and 1994 found that some fluids may be more likely than others to help a person avoid kidney stones, reports *Science News*. Of the 17 beverages studied, tea decreased the risk of kidney stones by 8 percent, while regular or decaffeinated coffee cut the risk by about 9 percent. The moderate intake of wine helped lower a person's risk of kidney stones by 20 percent or more. "Strangely, an 8-ounce glass of grapefruit juice daily boosted the risk of stones by 44 percent," the study showed. "No other drink had such a negative impact." Dr. Gary Curhan, a nephrologist and epidemiologist in Boston, was quoted as saying: "Modifying beverage intake might make a difference," but only as part of a broad treatment strategy.

### Easter's Meaning in Australia

Australia's *Sun-Herald* newspaper conducted a poll in which people were asked at random what Easter meant to them. The published results were in this order: chocolate Easter eggs (54 percent), a long-weekend holiday (39 percent), the Royal Easter Show (21 percent), a religious occasion (20 percent). David Milikan, a minister of the Uniting Church, said that he was not surprised that so few people in Sydney associated Easter with religion. He added: "The churches are dying . . . All the mainline denominations are facing a massive drop in num-

bers." Sydney's Roman Catholic archbishop lamented: "For many, Easter has no religious significance at all; it is just another secular festival."

### Pornography for Women

"Women are slowly closing the gap with men in terms of their interest in sexually explicit on-line material," reports *The New York Times*. A number of such sites for women combine "soft-core pictures . . . and shopping." After the debut of one site specifically designed for heterosexual women, the *Times* noted that "the site is just another drop in the deep well of sexually explicit content that runs beneath the mainstream on-line world."

### Addicted to Shopping



"More and more people in Germany suffer from compulsive shopping," reports the newspaper *Grafschafter Nachrichten*. According to business psychologist Alfred Gebert, compulsive shoppers get a euphoric feeling that vanishes quickly after paying for the goods. They even show physical withdrawal symptoms, says Gebert. "They shiver, sweat, and suffer from stomach cramps." For this reason, people with high incomes and good credit are more at risk than poor people. Possible causes for the addiction are

said to include 'loneliness, low self-esteem, stress, and problems at the workplace.' To help fight the compulsion, Gebert recommends cultivating a hobby. Especially important, says Gebert, are social contacts. "Without outside help, the addiction is only recognized when the debt trap snaps shut and the last credit is used up," he says.

### Spying on Children

Some parents in Japan have begun hiring private detectives to spy on their children in order to protect them from bullies at school. According to *The Daily Yomiuri*, a professor at Osaka City University who has surveyed over 6,000 students said: "Bullied children are generally eager to conceal the fact from their family, fearing that they will be thought less of for their inability to fight back or make it stop." Some parents who suspect that their children are being harassed have resorted to planting electronic bugs on them in order to listen to their conversations. Others have hired private detectives to follow "the child at a discreet distance, recording evidence against tormentors and swooping in like guardian angels to rescue a child whose life is taking a dangerous turn." But child advocates, says the newspaper, "denounce parental spying as a dreadful step that is likely to further estrange the very youngsters who most need to trust and confide in an adult." Parents, though, claim that it is a way to help their troubled children when communication has broken down.

## FROM OUR READERS

**Rain Forests** Thank you for the clear and comforting information you published on rain forests. (May 8, 1998) It is sad to see how man's insanity and greed are destroying our planet and its precious fauna and flora. It makes me happy to think that shortly our Grand Creator, Jehovah, will step in and defend this precious jewel and its living organisms.

F. A., Brazil

I am glad to say that your article has shed much light on the many problems and issues that concern the destruction of our rain forests today. I would particularly like to thank you for providing the information in the last paragraph—the fact that there is hope for our remaining forests and that a future generation of rain forests will be sure to thrive.

J. T., Australia

I have just read the admirable issue of *Awake!* magazine given to me by a friendly stranger who is one of Jehovah's Witnesses. I am a member of the Edinburgh University Ecological Society, having taken a degree in forestry at Edinburgh University in 1939. We were taught a lot about the tropical rain forest. I do congratulate you and your assistants on the excellence of the series "Can Our Rain Forests Be Saved?" I read every word of it. May your sacred movement flourish! It will flourish.

L. M., England

**The Year 2000** The article "The Bible's Viewpoint: How Significant Is the Year 2000?" in the May 8, 1998, *Awake!* was a welcome reminder. I appreciate your forthrightness in laying to rest any tendency to speculate and your honesty in explaining past statements concerning the timing of Jehovah's day.

S. W., United States

**Victorious in the Face of Death** It's a pleasure to write to you and thank you for publishing the experiences of our brothers during the second world war and afterward, such as those in the series "Victorious in the Face of Death." (May 8, 1993) That series incited me to continue to serve Jehovah, following in the footsteps of his victorious Witnesses. Even the threat of death didn't stop them from loving Jehovah.

A. A., Albania

**Life and Death in Cambodia** Thank you for the article "My Long Journey From Life and Death in Cambodia." (May 8, 1998) It is wonderful to serve Jehovah faithfully and to know that like Wathana Meas, who as a soldier killed others to survive, many are following this same road despite sad memories. I was shocked to read that he spent three months hidden in a pit. Little did he know that he was soon to experience the greatest privilege of his life—getting to know Jehovah!

C. M. S. L., Brazil

**Do You Judge by Appearances?** Appearances can be deceptive, as was well illustrated by the folktale about Nasreddin Hoja. (May 8, 1998) Thank you for reminding us that we should not judge others favorably or unfavorably merely on the basis of their appearance—and that Jehovah judges us on our heart condition, not our appearance.

A. O. F. A., Brazil

**Love Never Fails** Thank you from the bottom of my heart for the concise, excellent article "'Love Never Fails'—Do You?" (May 8, 1998) The ideas that were developed in connection with the different facets of true love deeply moved and encouraged me, especially as the article arrived just when I really needed help. I am now convinced that whatever the circumstances, true love never fails.

S. G., France

# PLANTS Versus POLLUTION

**R**EMOVING pollutants from contaminated soil and water is a lengthy, expensive, and often difficult business. However, ordinary plants are proving capable of doing the job all by themselves.

Scientists are considering using the common pondweed and periwinkle to clean up old munition sites and reclaim the land. In experiments, sterilized parrot feather and periwinkle extracted TNT so well that within a week no trace of explosive remained in the plants' tissues, nor did burning them produce an explosion! Other researchers discovered that cells and extracts of the common sugar beet could absorb and degrade nitroglycerin.

What about water heavily contaminated with radioactivity? Sunflowers seem to be helpful. Six-week-old sunflowers were used to tackle contaminated wastewater in an abandoned uranium factory in Ohio, U.S.A. The result? Uranium contamination was reduced from an average of 200 micrograms per liter to below the safety limit of 20 micrograms per liter. Other tests, at the Chernobyl reactor, near Kiev, showed that sunflowers soaked up 95 percent of the radioactive strontium and cesium within ten days!

Farmers may soon be using the yellow iris and the bulrush in their efforts to avoid polluting watercourses with pesticides and herbicides. This decontamination process is accomplished primarily by microbes in the plants' root systems that break down the contaminants and clean the water.

The above examples illustrate the marvelous capacity of the earth to cleanse itself.



# **"LIKE WOOD TO A FIRE"**



**T**HAT is how Jennifer, a 16-year-old girl from Oakland, California, U.S.A., described the *Watchtower* and *Awake!* magazines. "By continually feeding my zeal with their contents, I blaze strong," is the way she put it. "The way things are written," she said, "makes it obvious that they are being written to reveal the truth of matters to those in the dark."

Jennifer also wrote to express thanks for "all the information that defends the validity of the Bible." She noted: "Almost every person I talk to lacks confidence in the Bible. The fact that all this information proving that the Bible is worthy of examination is being published lets me know that this information isn't needed only where I live."

This is very true. Information highlighting the value of the Bible is clearly needed worldwide. That is why the brochure *A Book for All People* has been provided. It answers such questions as: Can the Bible be trusted? Does it agree with science? Is it a practical book for modern living?

## **A BOOK FOR ALL PEOPLE**

