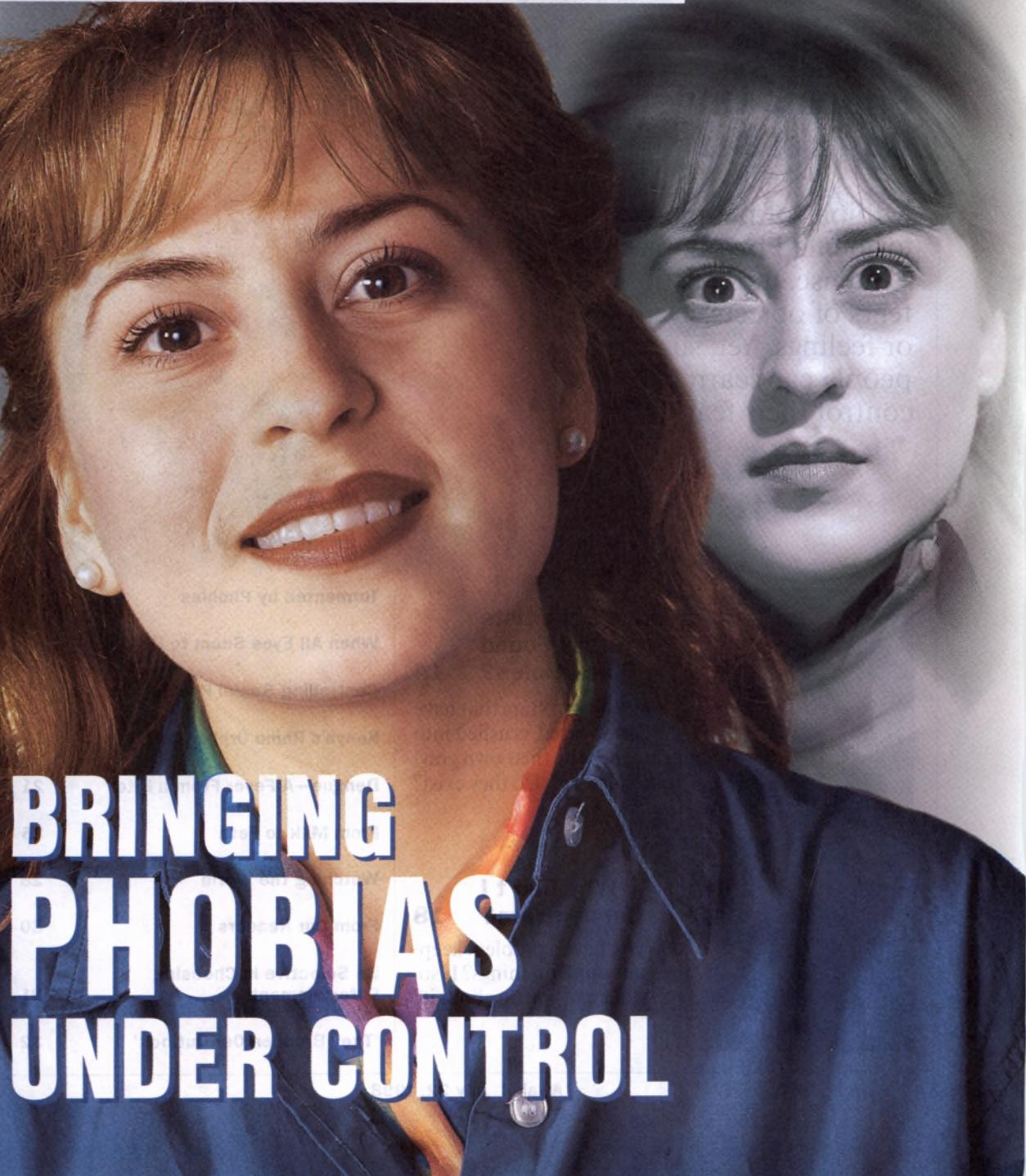


# **Awake!**

July 22, 1998

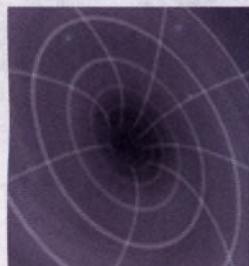


**BRINGING  
PHOBIAS  
UNDER CONTROL**

Average Printing 19,617,000  
Published in 81 Languages

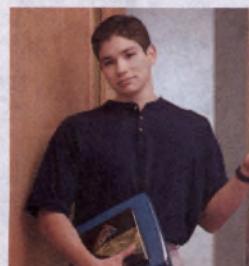
## Bringing Phobias Under Control 3-11

Millions of people are tormented by phobias—intense, unrealistic fears of objects, events, or feelings. Yet, such people can learn to control their fears.



### Have Scientists Really Found Black Holes? 14

Once-bright stars that have disappeared, crushed into nothingness by their own gravitational force. Do they exist?



### Why Can't I Concentrate? 18

Do you have a problem keeping your mind on things? If so, what can you do about it?

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# TORMENTED BY PHOBIAS



**T**HE word "phobia" refers to an intense, unrealistic fear of an object, an event, or a feeling. But a definition alone cannot convey the terror and loneliness that mark this condition. Raeann Dumont, who has treated phobias for more than two decades, notes: "Phobic people may avoid so many situations that they become house-bound, or they may live with constant, unrelenting anxiety, or they may relieve their anxiety with alcohol, which may cause additional problems."

Phobias are classified among a group of ailments called anxiety disorders.\* It is estimated that 12 percent of the adult population in the United States will deal with a phobia at some point in their life. Many of these will suffer in silence for years. "Unfortunately," reports the Anxiety Disorders Association of America, "about three-quarters of individuals with phobias never get help. Many people with phobias are reluctant to seek assistance because of embarrassment. Others don't understand what they have or where to find help, and some fear the treatment itself."

There are hundreds of known phobias, but experts usually arrange them in three categories. *Simple phobias* focus on an object or a situation, such as insects, animals, flying, and being in closed spaces. *Agoraphobia* usually occurs in conjunction with panic attacks. The sufferer fears having a panic attack to the extent that he or she avoids all places and situations where previous attacks occurred. *Social phobias* are characterized by a fear of being embarrassed in public settings, such as speaking before an audience.

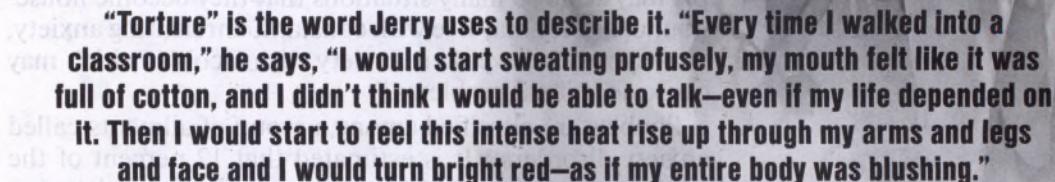
Consider just one of these three—social phobias. *The Washingtonian* states: "Lump together all the simple phobias, such as fear of snakes or flying, and they don't even touch social phobia as a cause of misery." Is this really true? If so, why? Let us see.

\* Other anxiety disorders include panic disorder, obsessive-compulsive disorder, posttraumatic stress disorder, and generalized anxiety disorder. For more information, see *Awake!* of February 8, 1996, "Compulsive Behavior—Does It Control Your Life?" and June 8, 1996, "Coping With Panic Attacks."

**"Phobias have often been a subject of ridicule. But 'funny' is one thing they are not."**

—Jerilyn Ross, director of a treatment center for anxiety disorders

# WHEN ALL EYES SEEM TO BE UPON YOU



**"Torture" is the word Jerry uses to describe it. "Every time I walked into a classroom," he says, "I would start sweating profusely, my mouth felt like it was full of cotton, and I didn't think I would be able to talk—even if my life depended on it. Then I would start to feel this intense heat rise up through my arms and legs and face and I would turn bright red—as if my entire body was blushing."**

**J**ERRY suffers from social phobia, a condition characterized by an intense fear of being scrutinized by others and of being publicly humiliated. "The person with social phobia believes that all eyes are on him," says a booklet published by the Anxiety Disorders Association of America. "The anxiety can lead to panic-like attacks including such symptoms as heart palpitations, faintness, shortness of breath, and profuse sweating."

Some might tend to dismiss the fears of social phobics, saying that they should just force themselves to ignore their shyness and "get out there and meet people." Granted, part of

combating social phobia involves confronting your fears. However, there is a vast difference between shyness and social phobia. "Unlike ordinary shyness," says Jerilyn Ross, "social phobia is so severe that it interferes with daily functioning, at work, at school, and in almost all interpersonal relationships."

Studies suggest that the lives of millions of people are impaired by social phobia.\* Con-

\* It should be noted that nearly everyone has some social fears. For example, many people become anxious at the prospect of speaking before an audience. The diagnosis of social phobia, however, is usually applied only to those whose fears are so extreme that they significantly disrupt normal functioning.

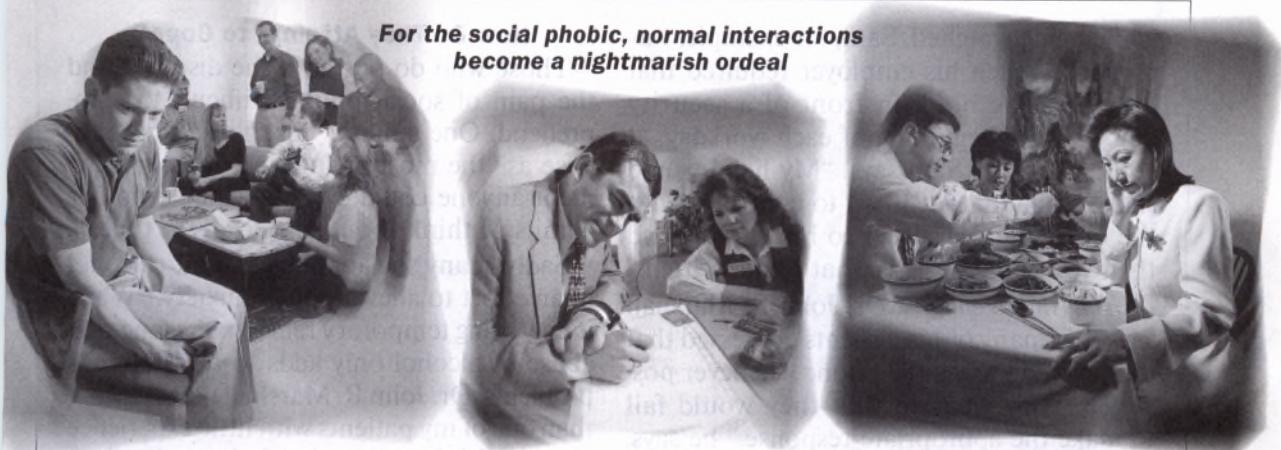
## **Awake!**

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**For the social phobic, normal interactions become a nightmarish ordeal**

sider some fears that are associated with this debilitating condition.

### The Fears of Social Phobia

**Public speaking.** Doug recalls being seized by panic while giving a brief speech to a local citizens' group. "All of a sudden I broke out in a cold sweat," he says. "My heart was pounding. I was trembling, shaking. My throat felt like it was closing up, making it difficult for me to get the words out." Granted, almost everyone gets jittery when standing before an audience. But the social phobic experiences a wave of terror that is intense and unremitting, and it does not diminish with practice. Indeed, Doug came to view even the most trivial speaking opportunity as if it were a threat to his life.

**Eating in the presence of others.** Since social phobics believe that they are being scruti-

nized, even a simple meal can become a nightmarish ordeal. They worry that their hands will shake, that they will spill their food or miss their mouths, or even that they will get sick. These fears can become self-fulfilling prophecies. The book *Dying of Embarrassment* notes: "The more you worry about the possibility of doing something embarrassing, the more anxious you become. The more anxious you become, the more likely you are to actually begin trembling or make abrupt, clumsy movements. This problem can build to the point where it becomes difficult to get food or a beverage to your mouth without dropping or spilling it."

**Writing in the presence of others.** Fearing that their hand will shake or that they will be observed scribbling illegibly, many social phobics panic when they have to sign a check or perform any other writing task

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while being watched. Sam, for example, was mortified when his employer required that he sign a log book in front of a security guard at the beginning of each workday. "I couldn't do it," Sam says. "My hand would shake so badly that I had to control it with the other hand in order to hit the line and then you couldn't read what I had written."

*Using the telephone.* Dr. John R. Marshall says that many of his patients confessed that they avoided using the phone whenever possible. "They worried that they would fail to make the appropriate response," he says. "Others feared that, because they would not know what to say, embarrassing silences would ensue and at the point when the conversation falters, anxiety would cause their voices to change, quiver, or squeak. They were terrified that they might stammer, stutter, or in other embarrassing ways give evidence of their disturbed state."

*Interacting with people.* Some social phobics fear virtually any situation that involves mingling with others. Often, they are particularly terrified of making eye contact. "People with severe social phobias often feel anxious uncertainty about where to direct their eyes and how to respond when others look at them," says *The Harvard Mental Health Letter*. "They avoid eye contact because they feel as though they do not know when to look and when to look away. They imagine that others will misinterpret their gaze."

There are other fears associated with social phobia. Many, for example, are terrified of using public rest rooms. Others dread shopping under the gaze of a salesperson. "I'm so self-conscious I often don't even see what I'm looking at," says one woman. "I'm always expecting or imagining the person behind the counter to demand that I just figure out what I want and stop wasting their time."

### How Do They Attempt to Cope?

Those who do not have the disorder find the pain of social phobia difficult to comprehend. One sufferer describes his experience as "the most awful kind of embarrassment anyone could ever imagine!" Another admits: "I think about suicide all the time."

Sadly, many social phobics turn to alcohol in an effort to alleviate their anxiety.\* While it may bring temporary relief, in the long run, abuse of alcohol only adds to the sufferer's problems. Dr. John R. Marshall notes: "More than one of my patients with little experience in social drinking have drunk themselves into a stupor—in the effort to calm themselves before or during a social situation, only to add to the very humiliation in the eyes of others that they feared so intensely."

Perhaps the most common coping strategy among social phobics is avoidance. Yes, many simply stay away from the situations that they dread. "I avoided as many situations as possible, even talking on the telephone," says a social phobic named Lorraine. In time, however, many sufferers find that avoidance imprisons them rather than protects them. "After a while," says Lorraine, "the loneliness and boredom would overwhelm me."

Avoidance can become "a self-reinforcing trap," warns Jerilyn Ross. "And every act of avoidance," she adds, "makes that trap easier to fall into the next time—until avoidance becomes an almost automatic response." Some sufferers routinely decline dinner invitations or turn down job opportunities that involve interacting with people. As a result, they never learn to confront their fears and conquer them. As Dr. Richard Heimberg puts it, "their lives are filled with imagined

\* Studies show that there is a high rate of alcoholism among social phobics and that there is a high rate of social phobia among alcoholics. Which comes first? It is claimed that a third of alcoholics had a history of panic disorder or some form of social phobia before they started drinking.

rejections that never came about and imagined failures at jobs they never tried because they avoided them."

There is, however, good news about social phobia: *It is treatable*. Of course, it is impos-

sible—even undesirable—to eliminate every form of anxiety altogether. Yet, those who suffer from social phobia can learn to control their fears, and the Bible contains practical counsel that can help.

# CONTROLLING SOCIAL PHOBIA

**"The most important thing for people with phobias to remember is that phobic disorders do respond well to treatment. It's not something they have to continue to suffer with."**

—Dr. Chris Sletten.

**H**APPILY, many social phobics have been helped to reduce their anxiety and even to face the social settings that they feared for many years. If you suffer from social phobia, be assured that you too can learn constructive ways to deal with this disorder. To do so, you will need to address (1) your physical symptoms, (2) the beliefs you hold about the situations you fear, and (3) the behavior that your fears elicit.

Bible principles can help. True, God's Word is not a medical textbook, nor does it mention the term "social phobia." Yet, the Bible can help you to "safeguard practical wisdom and thinking ability" when dealing with your fears.—Proverbs 3:21; Isaiah 48:17.

## Managing Your Symptoms

The physical symptoms of social phobia vary from one person to the next. How does *your* body respond as you approach a feared situation? Do your hands shake? Does your heart beat rapidly? Do you experience abdominal distress? Do you perspire or blush, or does your mouth become dry?

Granted, it is unpleasant to contemplate sweating, stammering, or trembling in front of others. But anxiety over what might happen will not help. Jesus aptly asked: "Who of you by being anxious can add one cubit to his life



## Watch Your Breathing!

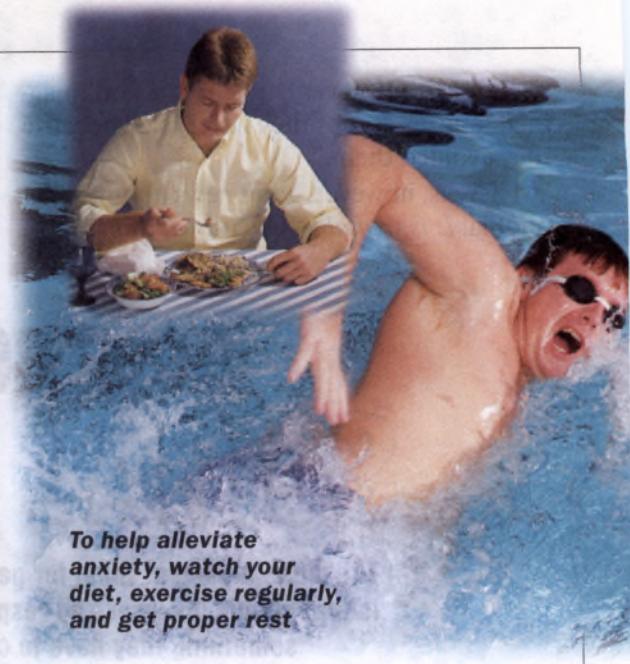
SOME social phobics are able to reduce the intensity of their physical symptoms by giving attention to their breathing. At first, this might sound strange. After all, everyone knows how to breathe! But experts say that many people with anxiety problems do not breathe properly. Often, their breathing is too shallow, too fast, or too much from the chest.

Practice inhaling and exhaling slowly. Breathing through the nose rather than through the mouth will make this easier. Also, learn to breathe from the diaphragm, since breathing from your upper chest increases your risk of hyperventilating. To test yourself in this regard, when standing up, place one hand above your waist and the other in the middle of your chest. While breathing, notice which hand is moving more. If it is the hand on your chest, you need to practice breathing from the diaphragm.

Of course, not every breath has to come from the diaphragm. (The normal ratio of diaphragm-to-chest breaths is about 4 to 1, but this will vary at times.) And a word of caution is appropriate: Those with chronic respiratory conditions—such as emphysema or asthma—should see a doctor before adopting new breathing techniques.

span?" (Matthew 6:27; compare Proverbs 12:25.) Indeed, dwelling on your symptoms and on what others might think of them will only make matters worse. "Imagining that others notice their nervousness makes people with social phobias still more anxious," observes *The Harvard Mental Health Letter*. "They come to anticipate the resulting awkwardness and poor performance—an expectation that sets off further alarms when they approach feared situations."

You may be able to reduce the intensity of your symptoms by practicing slow breathing from the diaphragm. (See the box "Watch Your Breathing!") Also helpful is regular physical exercise and muscle relaxation. (1 Timothy 4:8) You may also need to make some life-style changes. For example, the Bi-



**To help alleviate anxiety, watch your diet, exercise regularly, and get proper rest**

ble counsels: "Better is a handful of rest than a double handful of hard work and striving after the wind." (Ecclesiastes 4:6) So make sure that you are getting sufficient rest. In addition, watch your diet. Do not skip meals or eat at irregular times. It may be necessary to cut back on caffeine, which can be a prime offender in stirring anxiety.

Most of all, be patient. (Ecclesiastes 7:8) One team of doctors reports: "In time, you'll notice that, while you're still apt to feel some anxiety in certain social situations, the intensity of your bodily symptoms will decrease considerably. Most importantly, with practice, your self-confidence will increase, and you'll be better prepared to enter the social situations you fear."

## Challenging Your Phobic Beliefs

It has been said that you cannot experience a feeling without first experiencing a thought. This seems to be true of social phobia. Hence, to reduce your physical symptoms, you may need to examine the "disquieting thoughts" that fuel them.—Psalm 94:19.

Some experts say that social phobia is, in



essence, a fear of disapproval. For example, while at a social gathering, a social phobic might say to himself, 'I look foolish. People must notice that I just don't fit in. I'm sure everyone is making fun of me.' A social phobic named Tracy had such feelings. In time, however, she questioned her beliefs. She came to realize that people had better things to do with their time than to analyze and judge her. "Even if I say something boring," Tracy concluded, "is it valid for someone else to disapprove of me as a person because of this?"

Like Tracy, you may need to challenge distorted thinking as to the likelihood—and the severity—of others' disapproval in social situations. Is there really valid reason to believe that people would become upset with you if your worst fears came true? Even if some did, is there cause to conclude that you would not survive the ordeal? Does the opinion of another person actually change your value as a person? The Bible wisely advises: "Do not give your heart to all the words that people may speak."—Ecclesiastes 7:21.

One team of doctors writing on social phobia stated: "Problems arise when people attach too much meaning and importance to the inevitable rejections that life brings. Rejection can be very disappointing. It can really hurt. But it doesn't have to devastate you. It's really not a catastrophe unless you make it one."

The Bible helps us to view ourselves realistically. It acknowledges: "We all stumble many times." (James 3:2) Yes, no one is im-

mune to imperfection and its sometimes embarrassing manifestations. Appreciating this helps us to make concessions for the weaknesses of others, and it encourages others to be just as understanding with ours. In any event, Christians know that the one whose approval really matters is Jehovah God—and he does not focus on our errors.—Psalm 103:13, 14; 130:3.

### Facing Your Fears

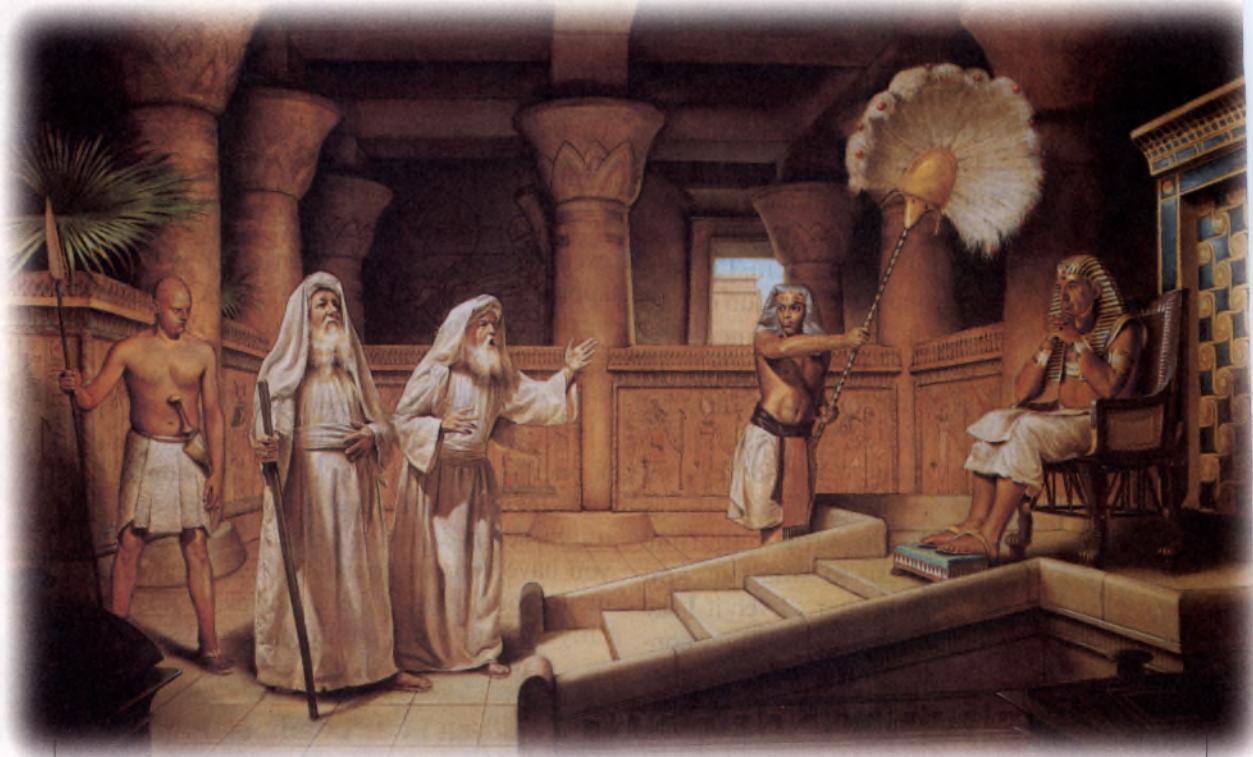
To win your battle with social phobia, sooner or later you will need to confront your fears. At first, the very thought of this might seem daunting. Until now, perhaps you have avoided social settings that would incite your fears. Likely, however, this has only eroded your confidence and further

### When Fear Leads to Panic

FOR some social phobics, anxiety is so intense that it leads to a panic attack. This sudden, overpowering fright often leaves its victim hyperventilating, feeling faint, and believing that he or she is having a heart attack.

Experts say that it is best not to fight the attack. Rather, they advise the sufferer to 'ride out' the anxiety until it passes. "You can't stop it once it starts," says Jerilyn Ross. "It just has to run its course. Just keep telling yourself it's frightening, but it's not dangerous. It's going to pass."

Melvin Green, director of an agency that treats agoraphobia, likens the attack to a small wave that can be seen approaching a beach. "This represents your initial feelings of anxiety," he says. "As the wave approaches land it grows larger and larger. This represents your feelings of anxiety growing. Soon the wave is very large and peaks. It then flows down into a smaller and smaller wave until it disperses on the beach. This image represents the start and finish of the anxiety attack." Green says that sufferers should not fight the feelings but flow with them until they pass.



***Jehovah helped men like Moses to accomplish more in their service than they might have expected***

entrenched your fears. With good reason, the Bible states: "One isolating himself will seek his own selfish longing; against all practical wisdom he will break forth."—Proverbs 18:1.

In contrast, facing your fears may tend to reduce your anxiety.\* Dr. John R. Marshall says: "We often encourage our socially phobic patients—particularly those whose fears are relatively circumscribed, such as public speaking—to force themselves to become active in settings and organizations that require social contact."

Confronting the situations that you have feared will convince you (1) that embarrassing flaws will most often *not* result in the dis-

approval of others and (2) that even if they *do* result in some disapproval, this is not a catastrophe. Remember, though, to be patient with your progress. Recovery is not accomplished overnight, nor is it realistic to expect all signs of social phobia to disappear. According to Dr. Sally Winston, the goal of treatment is, not to get rid of the symptoms, but to make them not matter. If they don't matter, she says, they go away or at least improve.

Christians have strong incentive to overcome social fears. Indeed, they are told to "consider one another to incite to love and fine works, not forsaking the gathering of ourselves together." (Hebrews 10:24, 25) Since Christian activity often involves interacting with others, working hard to control your social fears can greatly aid your spiritual advancement. (Matthew 28:19, 20; Acts 2:42; 1 Thessalonians 5:14) Keep the matter be-

\* Some doctors recommend that if this step seems overwhelming, practice simply imagining yourself in the circumstance you fear. Unfold the scene with as much detail as possible. Your anxiety level may rise; but keep reminding yourself that the disapproval of others is not as likely or as severe as you think, and construct the ending of the scene to support that view.

fore Jehovah God in prayer, for he can supply you with “power beyond what is normal.” (2 Corinthians 4:7; 1 John 5:14) Ask Jehovah to help you to acquire a balanced outlook on the approval of others and to cultivate the necessary skills to do what he requires.

Admittedly, each sufferer’s problems are unique, and each one will have different obstacles to face and different strengths to draw on. Some have made considerable improvement by using the suggestions that have been discussed. There are cases where additional help may be necessary. Some, for example, have been helped by medication.\* Others have sought the help of a mental-health expert. *Awake!* does not recommend or endorse any particular kind of treatment. Whether a Christian pursues such treatment is a personal decision. He should be careful, however, that any treatment he receives does not conflict with Bible principles.

### **Men “With Feelings Like Ours”**

The Bible can be of great encouragement, for it contains real-life examples of people who conquered personal obstacles in order to do what God required of them. Consider Elijah. As one of Israel’s foremost prophets, he displayed what may seem like superhuman courage. Yet, the Bible assures us that “Elijah was a man with feelings like ours.” (James 5:17) He was not immune to periods of intense fear and anxiety.—1 Kings 19:1-4.

The Christian apostle Paul went to Corinth “in weakness and in fear and with much trembling,” evidently having strong misgivings about his own abilities. And he did meet with a measure of disapproval. Indeed, some opposers said of Paul: “His presence in person is weak and his speech contemptible.”

\* Those who consider taking medication should weigh the risks and the benefits. They should also consider whether the phobia is severe enough to warrant drug therapy. Many experts feel that medication works best when it is combined with a treatment that addresses the phobic’s fears and behavior.

Yet, there is no indication that Paul allowed the twisted opinion of others to influence his view of himself or his abilities.—1 Corinthians 2:3-5; 2 Corinthians 10:10.

Moses lacked confidence in his ability to approach Pharaoh, claiming to be “slow of mouth and slow of tongue.” (Exodus 4:10) Even when Jehovah God promised to help him, Moses begged: “No, Lord, please send someone else.” (Exodus 4:13, *Today’s English Version*) Moses could not see his strengths, but Jehovah could see them. He viewed Moses as mentally and physically competent to fulfill the assignment. Still, Jehovah lovingly provided Moses with an assistant. He did not force Moses to face Pharaoh alone.—Exodus 4:14, 15.

Jeremiah too is an outstanding example in this regard. When he was commissioned as God’s prophet, this young man responded: “Alas, O Sovereign Lord Jehovah! Here I actually do not know how to speak, for I am but a boy.” The strength to carry out his assignment was not inherent in Jeremiah. Yet, Jehovah was with him. He helped Jeremiah to become “a fortified city and an iron pillar and copper walls against all the land.”—Jeremiah 1:6, 18, 19.

Therefore, if fears and anxiety cause you suffering, do not conclude that you lack faith or that Jehovah has rejected you. On the contrary, “Jehovah is near to those that are broken at heart; and those who are crushed in spirit he saves.”—Psalm 34:18.

Indeed, the Bible examples mentioned above show that even stalwart men of faith grappled with feelings of inadequacy. While not requiring more than each could reasonably give, Jehovah helped Elijah, Paul, Moses, and Jeremiah to accomplish more than they might have expected. Since Jehovah “well knows the formation of us, remembering that we are dust,” be assured that he can do the same for you.—Psalm 103:14.

# Kenya's Rhino Orphans

BY AWAKE! CORRESPONDENT IN KENYA

**W**HAT happens in the wild when a young animal becomes separated from its parents? Likely it will be killed by predators. To prevent that, game rangers in Kenya rescue such infant animals and take them to animal orphanages. One of the best-known is operated by Daphne Sheldrick at Nairobi National Park. For decades, Sheldrick has reared and restored to the wild many animals, including buffalo, antelope, civet cats, warthogs, mongooses, elephants, and rhino.

Last year she had in her care two baby black rhino, Magnette and Magnum. Magnette is the calf of Nairobi Park's Edith, who is still living. The calf was brought to the orphanage in mid-February of 1997, having somehow become separated from its mother. When the rangers finally located Magnette's mother, five days had passed. By then, the likelihood that the mother would accept the calf was remote because of the length of separation and the smell of humans on the animal.

**Magnum (left) and Magnette  
at four months of age**

Magnum was born on January 30, 1997, and is the calf of a rhino named Scud, who had lost the use of her right foreleg, possibly by stepping into a hole while at full gallop. Although extensive efforts were made to heal the injury, bone infection developed, and Scud had to be euthanatized three weeks after giving birth to Magnum.

## Rearing Rhino

Young rhino are eager to please and easy to handle, but rearing them is no living-room project. At four-hour intervals during the day, they nurse from a king-size baby bottle, drinking a full-cream milk formula. They also dine on shrubs and bushes. Though baby rhino are only about 18 inches tall and weigh between 60 and 80 pounds at birth, they put on weight at an astounding rate—gaining two pounds a day! When full grown, a rhino weighs more than a ton.

Their keepers accompany Magnette and Magnum on long walks through the park each day. These walks are not merely for exercise; they serve an important purpose—the integrating of the rhino into the wild. Let us consider how this is done.



Rhino have weak eyesight, but they possess a keen sense of smell and a phenomenal memory. Thus, rhino first come to know each other by scent. Rhino mark the boundaries of their territory by leaving dung piles (middens) and by spraying their urine on bushes.

Under normal circumstances, a calf is protected by its mother, its unique scent trail mingling with hers until the next calf is due. By then, the baby will be fully integrated into and accepted by the established rhino community. For newcomers like Magnette and Magnum, the situation is different. They must add their droppings to the established middens of the rhino who live in the area before physical contact with them takes place. So during their long daily walks, the rhino orphans make their own contribution to established middens in the bush. In this way their scent is discovered, investigated, and finally accepted by the local rhino population. The relocation of hand-raised rhino into the wild is, therefore, a complicated process that can take several years.

### What Future for the Orphans?

According to the World Wildlife Fund, in 1970 there were about 65,000 black rhino in Africa. Today there are fewer than 2,500. This drastic decline has been caused by

poachers who have slaughtered rhino for their skin and horn. On the black market, rhino horn is worth more than its weight in gold. Why is it highly prized?

For one thing, in some countries in the Far East, many believe that powdered horn can reduce fever. Chemical tests have shown that there may be some truth in this but only if administered in amounts far higher than those found in current remedies. Of course, there are many other medicines that reduce a fever.

Rhino horn is also sought after for cultural reasons. In one country of the Middle East, the curved dagger is a coveted emblem of manhood. So prized is a dagger with a rhino-horn handle that buyers are willing to pay \$580 for a handle of new horn and \$1,200 for a handle of antique horn.

As a result of poaching, Kenya lost more than 95 percent of its rhino in less than 20 years. By the early 1990's, the number had fallen from 20,000 to barely 400. Since then, because of intense protection measures, the rhino population has increased to about 450. Kenya is now one of only three African countries in which black rhino populations are either stable or increasing. So the future for Magnette and Magnum looks good, and their keepers hope that they will eventually join the local rhino community and live long and happy lives.



# HAVE SCIENTISTS REALLY FOUND BLACK HOLES?

Einstein: U.S. National Archives photo

**I**T SEEKS like science fiction—once-bright stars becoming invisible, crushed by their own gravitational force, with nothing, not even light, escaping their grasp. Many astronomers believe that such black holes may be commonplace in the universe. Would you like to know more about them? The story begins in the beautiful northern constellation called Cygnus, meaning “the Swan.”

## Cygnus X-1—A Black Hole?

Since the 1960's, astronomers have been interested in a certain area of the constellation Cygnus. Orbiting observatories launched above Earth's atmosphere detected a powerful source of X rays coming from this area, dubbed Cygnus X-1.

Scientists have long known that the hotter an object is, the more energy it gives off at shorter, more energetic electromagnetic wavelengths. If you heat a piece of iron in a very hot furnace, at first it will glow red and then yellow and white as the iron gets hotter. In that way, stars are like iron bars. Relatively cool stars, about 3,000 K, are reddish in color, while a yellow star, like the Sun, has a surface temperature closer to 6,000 K.\* However, you would have to heat stellar gas to millions of kelvins to get the X-ray radiation

\* Kelvin (K) is a temperature scale used by scientists, which starts at absolute 0 (believed to be the coldest temperature possible) and goes up in degrees Celsius. Since absolute 0 is -273 degrees Celsius, then 0 degrees Celsius is 273 K.

coming from Cygnus X-1. No star has a surface temperature like that.

At the location of Cygnus X-1, astronomers have found a star with a surface temperature estimated at 30,000 K—very hot, indeed, but not nearly hot enough to account for the X rays. This star, cataloged as HDE 226868, is estimated to be about 30 times as massive as the Sun and 6,000 light-years away from Earth. This supergiant has a companion, and the two are whirling around each other in an orbital waltz every 5.6 days. Scientists calculate that the companion is only a few million miles from HDE 226868. According to some sources, this companion is about ten times as massive as the Sun. But there is something very strange about this companion—it is invisible. No normal star that big should be invisible at such a distance from Earth. An object that massive that appears to give off X rays but not visible light is a good candidate for being a black hole, say scientists.

## A Trip to a Black Hole

Imagine that you could travel to Cygnus X-1. Assuming it is indeed a black hole, what you would see might well look like the illustration on page 17. The big star is HDE 226868. While this star is millions of miles in diameter, the black hole may be about 40 miles in diameter. The tiny black dot in the center of the whirlpool of glowing gas

is the event horizon, or surface, of the black hole. It is not a solid surface, however, but more like a shadow. It is the edge of the region in which the gravity around the black hole is so strong that not even light can escape. Many scientists think that inside the horizon, in the center of the black hole, is a point of zero volume and infinite density, known as a singularity, into which all the matter in the black hole has disappeared.

The black hole is draining the companion star's outer layers of gas. The gas from the star forms a glowing pancake as the gas spirals faster and faster and becomes heated by friction around the black hole. This disk of superheated gas produces X rays just outside the black hole, as the gas is accelerated to fantastic speeds by the intense gravity. Of course, once the gas falls into the black hole, no more X rays—or anything else—can escape.

Cygnus X-1 is a spectacular sight, but don't get too close! Not only are the X rays deadly but so is its gravity. On Earth, a slight difference in the force of gravity exists between your head and your feet while you are standing. This difference creates a tiny pull that cannot be felt. However, at Cygnus X-1, that small difference is multiplied 150 billion times, creating a force that would actually stretch your body, as if invisible hands were pulling your feet one way and your head another!

### **Cygnus A—Is It a Supermassive Black Hole?**

There is another mysterious area in the constellation Cygnus. Visually, this area contains only the very faint speck of a distant galaxy, but it emits some of the strongest radio waves in the sky. It is called Cygnus A, and ever since it was discovered over 50 years ago, scientists have puzzled over it.

It is mind-boggling to imagine the scale of Cygnus A. While Cygnus X-1 is within our

own galaxy, a few thousand light-years away, Cygnus A is thought to be hundreds of millions of light-years distant. Although Cygnus X-1 and its visible companion are only about one light-minute apart, the plumes formed by the two radio jets in Cygnus A are hundreds of thousands of light-years apart.\* Something in the center of Cygnus A has evidently been firing these intense jets of energy in opposite directions for hundreds of thousands or even millions of years, like a sort of cosmic ray gun. Detailed radio maps of the center of Cygnus A reveal that compared with the jets, the ray gun is very small, less than a light-month in size. If it had wobbled during all that time, the beams would be crooked. But the mysterious jets are perfectly straight, as if the ray gun firing them had been stabilized by an enormous gyroscope.

What could be going on? "Of the dozens of ideas that had been proposed by the early 1980s to explain the central engine," writes Professor Kip S. Thorne, "only one entailed a superb gyroscope with a long life, a size less than a light-month, and an ability to generate powerful jets. That unique idea was a gigantic, spinning black hole."

### **Other Black Hole Suspects**

In 1994 the newly repaired Hubble Space Telescope took a close look at "nearby" galaxy M87, estimated to be 50 million light-years away. With its updated optics, Hubble detected a whirlpool of gas in the center of M87 that was whirling around some object at an astonishing 1.2 million miles an hour. What could cause the gas to move at such a speed? Calculations showed that the object within the whirlpool must have a mass equal to at least two billion Suns. But that object is crammed into a "tiny" space the size of our

\* A light-year is a unit of length equal to the distance that light travels in one year in a vacuum, or about 5,878,000,000,000 miles. Correspondingly, a light-minute is the distance light would travel in one minute, a light-month the distance light would travel in one month, and so forth.



Tony and Daphne Hallas/Astro Photo



Tony and Daphne Hallas/Astro Photo

**The Cygnus constellation contains, among others, the North America Nebula (1) and the Veil Nebula (2). Cygnus X-1 (3) is located partway down the swan's neck**



Cygnus (the Swan)

## What Would Make a Black Hole?

PRESENT scientific understanding is that stars shine because of a ceaseless struggle between gravity and nuclear forces. Without gravity to squeeze the gas deep inside the star, nuclear fusion could not take place. On the other hand, without nuclear fusion to resist the pull of gravity, some very strange things can happen to stars.

Scientists believe that when stars about the size of our sun exhaust their nuclear fuel of hydrogen and helium, gravity squeezes them down to hot cinders about the size of the earth, called white dwarfs. A white dwarf may contain as much mass as the sun, but its mass is crammed into a space a million times smaller.

You can think of ordinary matter as mostly empty space, with almost all the mass of each atom located in a tiny nucleus surrounded by a much larger cloud of electrons. But inside a white dwarf, gravity squeezes the electron cloud into a tiny fraction of its previous volume, shrinking the star to the size of a planet. For stars about the size

solar system. The only thing that scientists can imagine that would possibly fit this description is a supermassive black hole.

Black hole candidates have now been detected in the center of a number of nearby galaxies, including our "next-door" neighbor, the Andromeda galaxy, only about two million light-years away. But there may be a giant black hole even closer to us than Andromeda! Recent observations suggest that a jumbo black hole may well reside in the center of our own galaxy, the Milky Way. Something in a small area, with an estimated mass of 2.4 million Suns, is causing the stars near the center of our galaxy to orbit around it at tremendous speeds. Physicist Thorne notes: "Evidence, gradually accumulated during the 1980s, suggests that such holes inhabit not only the cores of most quasars and radio galaxies, but also the cores of most large, normal (non-radio) galaxies such as the Milky Way and Andromeda."

Have scientists really discovered black holes? Possibly. Certainly they have discovered some very strange objects in the constellation Cygnus and elsewhere that at present can most easily be explained as black holes. But new data can also challenge commonly held theories.

Over 3,500 years ago, God asked Job: "Have you come to know the statutes of the heavens?" (Job 38:33) Despite impressive scientific progress, that question is still timely. After all, it is just when man begins to think he understands the universe that some new, unexpected observation comes along to upset his carefully constructed theories. In the meantime, we can gaze at the constellations in wonder and take delight in their beauty!

of our sun, at this point there is a standoff between gravity and forces possessed by the electrons, preventing any further compression.

But what of stars heavier than the sun, with more gravity? For stars more than 1.4 times as massive as the sun, the force of gravity is so great that the electron cloud is squeezed out of existence. The protons and electrons then combine into neutrons. The neutrons resist further squeezing, provided the gravity is not too strong. Instead of a white dwarf the size of a planet, the result is a neutron star the size of a small asteroid. Neutron stars consist of the densest known material in the universe.

What, though, if the gravity is further increased? Scientists believe that in stars about three times the mass of the sun, the gravity is too strong for the neutrons to withstand. No form of matter known to physicists can resist the cumulative force of all this gravity. It seems that the asteroid-size ball of neutrons would get squeezed not just into a smaller ball but into nothing, into a point called a singularity, or some other as yet undescribed theoretical entity. The star would apparently disappear, leaving behind only its gravity and a black hole where it used to be. The black hole would form a gravitational shadow in place of the former star. It would be a region in which gravity was so strong that nothing—not even light—could escape.

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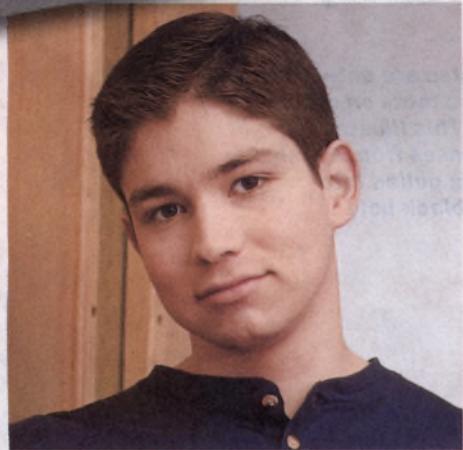
## Cygnus X-1 in Theory

**Black holes are detected by their effects on other bodies. This illustration shows gases from a star being pulled into a black hole**

**Artist's conception of a black hole (within red rectangle), and enlargement (below)**



## Young People Ask...



# Why Can't I Concentrate?

**"Sometimes it's accidental. I'm listening at a congregation meeting, and then, all of a sudden, my mind starts to wander. Ten minutes later I come back." —Jesse.**

**P**AY ATTENTION!" Do you often hear those words from your teachers or parents? If you do, then maybe you are having a problem keeping your mind on things. As a result, your grades may be suffering. And you may find that others view you negatively, brushing you off as being zoned-out, spacey, or just plain rude.

More important, an inability to pay attention can have a negative impact on your spirituality. After all, the Bible itself commands: "Pay attention to how you listen." (Luke 8:18) In fact, Christians are commanded to "pay more than the usual attention" to spiritual matters. (Hebrews 2:1) And if you find it hard to concentrate, you may find it hard to heed this counsel.

What may be the problem? In some cases lack of concentration may be the result of a physical problem. Attention Deficit Disorder, for example, is believed by some researchers to involve a malfunction of the brain's neurotransmitter systems.\* Some youths have undiagnosed problems, such as hearing or vision loss. These too can impede one's ability to pay attention. Researchers have found that youths in general have more difficulty concentrating than adults. Inattentiveness is thus common among youths, though it is seldom the result of a medical disorder.

### Your Changing Thought Patterns

If you are having trouble concentrating, more than likely you are simply suffering the pangs of growing up. The apostle Paul wrote: "When I was a babe, I used to speak as a babe, to think as a babe, to reason as a babe; but now that I have become a man, I have done away with the traits of a babe." (1 Corinthians 13:11) Yes, as you move toward adulthood, your thinking patterns change. According to the book *Adolescent Development*, "new conceptual abilities . . . emerge in early adolescence." You develop the ability to comprehend and analyze abstract thoughts and concepts. You begin to have a deeper grasp of morals, ethics, and other broad issues. You begin thinking about your future as an adult.

\* See *Awake!* issues of November 22, 1994, pages 3-12; June 22, 1996, pages 11-13; and February 22, 1997, pages 5-10.

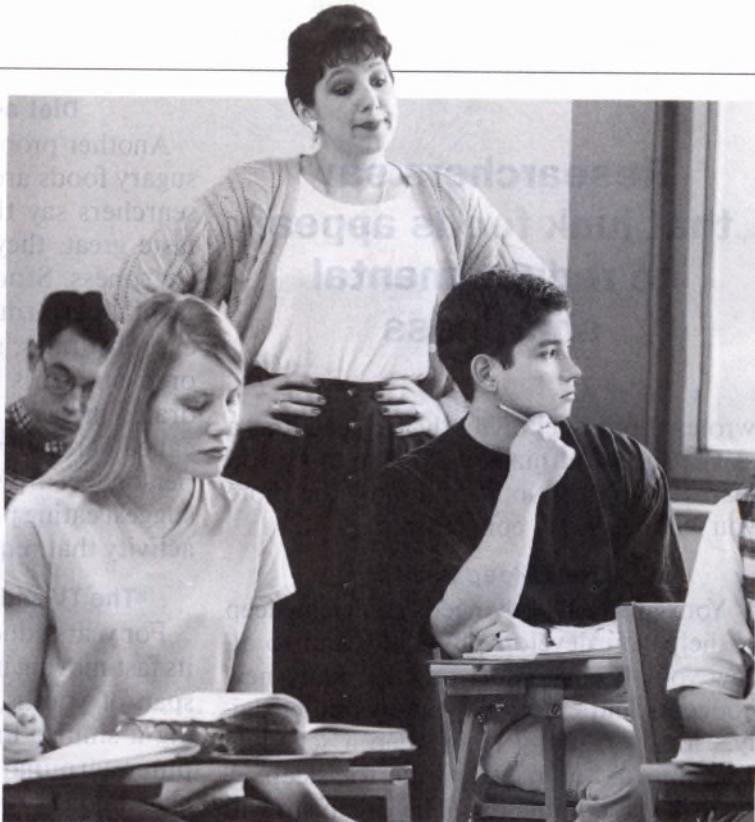
**Do you often find it hard to pay attention in class?**

The problem? Having all these new thoughts, ideas, and concepts swirling around in your brain can be very distracting. You no longer think on the simple, basic level of a child. Now your brain impels you to analyze and question what you see and hear. A comment by a teacher or a lecturer can trigger an exciting mental excursion. But unless you learn to control your stray thoughts, you can miss out on valuable information. Interestingly, the Bible says that the righteous man Isaac spent time quietly meditating. (Genesis 24:63) Perhaps setting aside some time each day to sit back, meditate, and sort things out might help you to be more focused at other times.

**Emotions and Hormones**

Your emotions may also be a source of distraction. You try to concentrate on what you are reading or listening to, but you find yourself thinking about other things. You alternate between boredom and excitement, depression and elation. Well, relax! You are not going crazy. In all probability, it is simply a case of your hormones playing havoc with you. You are experiencing the changes of puberty.

Kathy McCoy and Charles Wibbelsman write: "Feelings abound in the adolescent years . . . This moodiness is, to some extent, part of being an adolescent. Part of this



has to do with the stress of all the changes you're experiencing right now." Furthermore, you are approaching "the bloom of youth"—the time when sexual desires are at their peak. (1 Corinthians 7:36) Says writer Ruth Bell: "The body changes of puberty often bring stronger sexual feelings. You may find yourself thinking more about sex, getting sexually aroused more easily, even at times feeling preoccupied with sex."<sup>\*</sup>

Jesse, quoted at the outset, experiences the mental wandering that is so common among teenagers: "Sometimes I think about girls or some worry I have or what I'm going to do later." Eventually, the storm of emotions will settle down. In the meantime, work on self-discipline. The apostle Paul

\* See the article "Young People Ask . . . How Can I Get My Mind off the Opposite Sex?" in our August 8, 1994, issue.

## **Researchers say that junk foods appear to reduce mental sharpness**

wrote: "I pummel my body and lead it as a slave." (1 Corinthians 9:27) The more you learn to control your emotions, the more you will be able to concentrate.

### **Your Sleep Habits**

Your growing body needs sufficient sleep to help you develop physically and to allow your brain to sort out the many new concepts and emotions you encounter daily. However, many teens keep a schedule that affords them little time for sleep. A neurologist comments: "The organism will not forget the hours of sleep that a person owes it. On the contrary, it will always remember and will suddenly present a bill that can be translated into lapses of memory, concentration problems, and slow thinking ability."

Some researchers believe that simply adding an hour or more of sleep each night can greatly improve one's ability to concentrate. True, the Bible condemns laziness and love of sleeping. (Proverbs 20:13) However, it makes good sense to get enough rest to function efficiently.—Ecclesiastes 4:6.

## **"Sometimes I think about girls or some worry I have"**

### **Diet and Concentration**

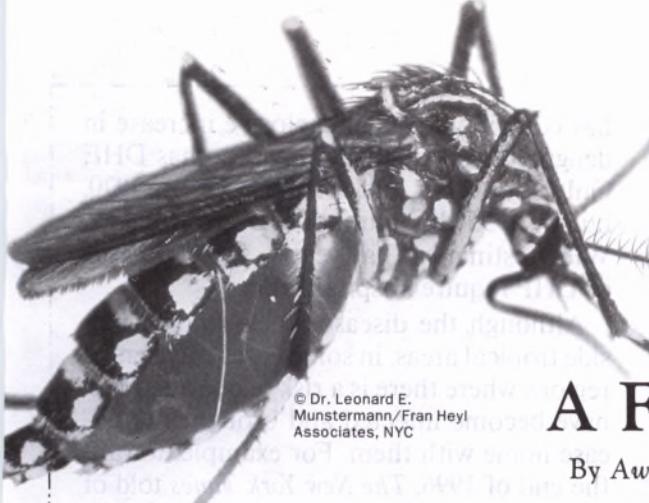
Another problem may be diet. Fatty and sugary foods are popular among teens. Researchers say that while junk foods may taste great, they appear to reduce mental sharpness. Studies likewise indicate that mental performance wanes after a meal of carbohydrates, such as bread, cereal, rice, or pasta. This may be because carbohydrates increase the amount of a chemical called serotonin in the brain and make a person feel drowsy. Some nutritionists thus suggest eating protein-rich foods before any activity that requires mental alertness.

### **The TV and Computer Generation**

For years educators have felt that TV and its fast-moving images shorten the attention span of youths, and some are now pointing a similar finger of blame at the computer terminal. While there is much debate among experts as to exactly how these modern technologies affect young people, spending an excessive amount of time watching TV or playing computer games can hardly be healthy. Admits one youth: "With things like video games, computers, and the Internet, we kids are conditioned to get what we want fast."

The problem is, many things in life are only achieved through effort, perseverance, and old-fashioned patience. (Compare Hebrews 6:12; James 5:7.) So never assume that things must be fast-moving and entertaining to be of value. Although watching TV and playing computer games can be entertaining, why not paint, draw, or learn to play a musical instrument? Such skills may enhance your powers of concentration.

Are there other ways you can develop your powers of concentration? Indeed, there are, and a future article will explore some of them.



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Munstermann/Fran Heyl  
Associates, NYC

# Dengue

## A Fever From a Bite

By Awake! correspondent in the Philippines

**U**NNOTICED, a mosquito lands on the little girl's bare arm. The insect quickly pierces her skin and taps the bloodstream. After a few moments, the mother glances at her daughter and spots the mosquito. With a quick swat, it is gone. Is that the end of it? Maybe not. The mosquito may be gone, but its brief invasion into the child's bloodstream has left unwanted organisms that are capable of causing disease.

Within two weeks the child experiences chills, headache, pain behind the eyes, extreme aching in her joints, and a high fever. As the illness progresses, she develops a red rash and becomes completely exhausted. She has contracted dengue, a fever from a mosquito's bite.

However, especially if the child has had a previous dengue infection, she may develop the more serious form of the disease, dengue hemorrhagic fever (DHF). With it, the capillaries leak, resulting in skin hemorrhages. There may be internal bleeding. Without proper treatment, the patient may experience profound shock and circulatory failure, leading to rapid death.

What exactly is dengue? Can it affect you? How can you protect yourself and your family? Let's take a closer look.

### What Is Dengue?

Dengue, also called breakbone fever, is just one of a number of diseases that can result from a mosquito's bite. The actual cause of the disease is a virus. An infected mosquito (that is, a mosquito that has previously bitten an infected human) carries the virus in its salivary glands. In the process of biting a person to get blood, it transfers the virus to the human.

There are four types of dengue virus. Infection with one type does not provide immunity to the other three types. After one infection, if a victim is bitten by a mosquito carrying another type, the result can be DHF.

### "Two Fifths of the World's Population" at Risk

According to the World Health Organization (WHO), dengue threatens 2.5 billion people, "two fifths of the world's population." *Asiaweek* reported: "Over 100 tropical and sub-tropical countries have reported dengue outbreaks, and there are tens of millions of reported cases each year, with 95% of the infected being children."

It is unclear when dengue was first recognized on the world scene. A report on "knee fever" in Cairo in 1779 may actually be referring to dengue. Since that time, dengue

## What Are the Symptoms?

### Symptoms of both dengue fever and dengue hemorrhagic fever (DHF)

- Sudden high fever
- Severe headache\*
- Pain behind the eyes
- Joint and muscle pain
- Swelling of lymph nodes
- Rash
- Exhaustion

### Symptoms more specific for DHF

- Sudden collapse
- Skin hemorrhaging
- Generalized bleeding
- Cold, clammy skin
- Restlessness
- Shock with weak pulse (dengue shock syndrome)

Do not delay in seeing a doctor if symptoms are observed. Children are especially at risk

\* Medical authorities say that aspirin should be avoided because it may aggravate bleeding.

has been reported worldwide. Particularly since World War II, dengue has had a significant impact on human health, beginning in Southeast Asia. Multiple types of the virus began to circulate, and this led to the more dangerous hemorrhagic variety. A publication produced by WHO says: "The first real outbreak of haemorrhagic fever in Asia was recognized in Manila in 1954." Other countries followed, notably Thailand, Vietnam, Malaysia, and neighboring areas. These early outbreaks in Southeast Asia had fatality rates ranging from 10 to 50 percent, but as more was learned about the disease, these rates dropped.

Since the 1960's, laxity in programs to control the mosquito that carries the virus

has contributed to an explosive increase in dengue. As dengue has spread, so has DHF. Only 9 countries had epidemics before 1970, but by 1995 this number had grown to 41. WHO estimates that yearly, 500,000 cases of DHF require hospitalization.

Although the disease is less known outside tropical areas, in some cases travelers to regions where there is a risk of contracting it have become infected and brought the disease home with them. For example, toward the end of 1996, *The New York Times* told of dengue cases in the United States—in Massachusetts, New York, Oregon, and Texas.

### Particular Dangers of DHF

As noted earlier, DHF is the life-threatening form of dengue. One of the dangers of DHF is that people are fooled into thinking that it is not that serious. Many mistake it for a case of the flu. However, postponing action may allow the illness to advance to the more serious stage in which the blood platelet count drops drastically, hemorrhaging begins (internally or through the gums, nose, or skin), and blood pressure sinks. The patient may collapse. By the time the family realizes that the condition is serious, he is already going into shock. They rush him to the hospital. There, the doctors find that he is already experiencing circulatory failure. Because of the critical situation, intravenous fluid replacement is ordered.

### Protecting Your Family

What can be done to minimize the effects of this disease? If the family lives where dengue is prevalent and a family member has a high fever lasting longer than a day, the family should wisely consult a doctor. This is particularly important if the sick one has other dengue symptoms, such as a rash or pain in muscles and joints or behind the eyes.



Source: Centers for Disease Control and Prevention, 1997

### **Range of "Aedes aegypti," a dengue-carrying mosquito**

The doctor may take a blood test. Non-hemorrhagic dengue may require only simple treatment. But if testing indicates that it is DHF, the doctor will likely recommend careful fluid management. This may include oral rehydration solutions, such as those used for diarrhea, or, in more critical situations, intravenous fluid replacement using Ringer's solution, saline solutions, or others. In treating cases of shock, the doctor may prescribe certain medications to help raise blood pressure and restore platelet levels.

If there is significant bleeding, doctors may be inclined to recommend a blood transfusion. Some may quickly recommend this without considering the alternatives. However, in addition to being against God's law, this is usually unnecessary. (Acts 15: 29) Experience has shown that careful management of circulatory fluids from the onset of the disease is the most important factor in the treatment. Cooperation between patient and doctor in this can help to eliminate confrontations over the matter of blood transfusion. This all emphasizes the importance of quick action when a person suspects DHF—See the box "What Are the Symptoms?"



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### **Preventive Measures**

One of the main carriers of the dengue virus is the *Aedes aegypti* mosquito. This species is common to tropical and subtropical areas around the world. (See accompanying map.) *Aedes aegypti* mosquitoes thrive in highly populated areas. Controlling the mosquito is one of the keys to controlling the disease.

### **Tips for Travelers**

Occasionally, travelers to tropical zones are infected with dengue, but dengue hemorrhagic fever is much rarer because this more serious form is normally contracted after a second dengue infection. Here are some safety suggestions for travelers:

- Wear long-sleeved shirts and long pants
- Use a mosquito repellent
- Stay away from heavily populated areas
- Stay in accommodations where you can close the windows and keep the mosquitoes out
- If you develop a fever after returning home, tell the doctor where you traveled

Mosquito control on a worldwide scale is not easy. However, there are things that you can do to help reduce the risk around your home. The female mosquito lays eggs in water. The larvae can develop in any container that will retain water for a week or so, such as abandoned tires, discarded cans, bottles, or open coconut shells. Getting rid of such containers will eliminate mosquito breeding sites. In addition, it is recommended that you turn buckets or boats upside down. Removing standing water from gutters will also help. Interestingly, at the beginning of the 1997/98 school year, the department of health in the Philippines discouraged the use of flowerpots in school classrooms for this reason.

If someone in the home contracts dengue, take steps to avoid his being bitten by other mosquitoes that may, in turn, carry the infection to others. A properly screened or an air-conditioned building can be a protection.

What about vaccination? An appropriate vaccine is not presently available. Research is being done to develop one, but this is complicated by the fact that complete protection would require immuniza-

tion against all four types of dengue. Vaccination for only one could actually increase the risk of DHF. Researchers are hopeful that an effective vaccine may be available in five to ten years.

Some researchers have been trying another approach. By using genetic engineering, they hope to prevent the dengue virus from replicating in mosquito saliva. If this works as planned, such genetically engineered mosquitoes would pass on to their offspring a resistance to dengue. Although some progress has been made, it remains to be seen how successful this will be.

At present, eradicating dengue completely does not appear to be possible. But taking practical precautions can help you and your loved ones avoid life-threatening complications—a fever from a bite.

**Possible breeding sites are**  
**(1) abandoned tires, (2) rain gutters, (3) flowerpots,**  
**(4) buckets or other containers, (5) discarded cans, (6) barrels**



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5



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# FROM MILK TO FETA

By Awake! correspondent in Greece

THE New York hosts prepared some traditional dishes that they thought their Greek guest would especially appreciate. However, when the last dish, a plate of Greek salad, was put on the dining table, the guest somewhat jokingly asked: "But where is the feta?"

Oh, yes, the feta cheese! If you think of Greek food, one of the things that may come to your mind first is fresh, white, soft, and spicy feta. In Greece, feta is a must on any traditional table, and of course, it is one of the basic ingredients of the famous Greek salad. As part of a recent effort to protect the distinctive nature and character of feta, the European Union officially recognized it as an exclusively Greek name and product, setting it apart from white cheeses produced elsewhere. To satisfy cheese lovers all over the world, Greece exports more than 9,000 tons of feta every year.

## A Bit of Background

Cheese making goes back a long way in man's history. The Bible character Job, who lived in the 17th century B.C.E. in what is now Arabia, in poetic language described how he had been formed in his mother's womb, saying to his Creator: "Did you not proceed to pour me out as milk itself and like cheese to curdle me?" (Job 10:10) It is believed that the art of making cheese was introduced to Europe through the

seafaring Phoenicians, who established colonies on Cyprus and the islands of the Aegean.

Remains of implements used in the making of cheese have been discovered both on Greece proper and on the surrounding islands, including Crete. At least one Aegean island struck coins bearing the image of little cheeses, and athletes preparing for the ancient Olympics were put on a cheese diet. In the *Odyssey*, Homer has the mythical Cyclops Polyphemus making sheep's milk cheese, perhaps a forerunner of feta, which he ripened in wicker baskets in his cave. In fact, the



The ingredients of a typical Greek salad

Italian and French words for cheese (*formaggio* and *fromage*) come from the Greek word *for-mos'*, meaning "basket"—the wicker basket used for draining cheese.

#### The Pickling of Feta

Let us, though, come back to feta. What makes genuine feta different is that it is made exclusively from goat's or sheep's milk. In Greece, by law, feta is at least 70 percent sheep's milk, with an allowance of up to 30 percent goat's milk; cow's

milk is strictly prohibited, something that is not true of "feta" produced elsewhere. Feta is not cooked or pressed, but it is cured briefly in a brine solution that adds a salty flavor to the sharp tang of the milk.

Let us visit a small cheese factory in the mountainous Peloponnisos and follow the steps taken to make, or pickle, feta. By the time we get there, Thanassis, the owner of the premises and a cheesemaker for decades, has already been busy since early morning collecting sheep's and goat's milk from the local producers. When we arrive, he is in the process of skimming, pasteurizing, and cooling the milk by means of a radiatorlike contraption.

"One goat or sheep produces about a kilo [two pounds] of milk a day," Thanassis informs us, "and it takes from 4 to 4.5 kilos [eight to ten pounds] of milk to make a kilo of feta."

Now it is time for him to add rennet and yogurt, the ingredients necessary for the milk to set. "Rennet is the lining of the stomach of a ruminant," Thanassis notes, "and it contains an enzyme called rennin. When rennin is combined with milk, the milk curdles and separates into curds and whey." The milk in the large vats appears deceptively still. But if we could use a microscope, we would see ferocious activity, as chemical reactions are changing the nature and composition of the milk. Peering over the vats, Thanassi-



sis remarks: "At this stage the temperature has to remain steady." He stresses that it is really a delicate balance. "One degree up or down, and my cheese is ruined."

Next, big crystals of raw salt are added to the mix. Forty-five minutes later, the milk is visibly transformed. Now it is thick and white, like a cross between jelly and yogurt, and is afloat in deep yellow whey, from which a rather bland Greek cheese is made. The set milk tastes nothing like the salty and spicy feta it will eventually become. Smooth, warm, and mellow, it feels strange on our palate.

### Curd Cutting and Salting

Now is the time for the cheesemaker to take more drastic action. Thanassis takes the cheese cutter—a long, stainless steel, paddlelike frame with rows of wire evenly spaced about an inch apart—and runs it horizontally and then vertically through the vat, forming a grid. Next he uses a long wooden oar with several large holes to stir the curds.

After being stirred, the paste is placed in round, stainless steel slotted molds to drain, and the yellow whey is pumped out. The curds are left in the molds.

We are told that the texture of the paste and the density of the curds in each mold are of utmost importance to the quality of the final feta product. The cheesemaker salts the molds and then, about an hour later, flips them and salts them again. Over the course of that day and the next morning, the curds are flipped and salted a couple of times.

### Finishing Touches

Now the molds are solid enough to be placed in kegs or barrels. This stage is called *lan'za*. The curds stay in kegs from three to five days. Then they are removed, washed down, and placed in other kegs. They will

be left in the kegs for anywhere from two weeks to 40 days to ferment, mature, and exude their own brine. Finally, the kegs are sent to the refrigerator, where they remain for at least two months before the cheese can be sold. To keep for months, feta should be stored in a liquid bath of brine, water, or milk. Although feta is exported in tin cans, in Greece it is usually sold in wooden kegs or barrels, which add to the flavor of the cheese.

"In winter the milk is creamier and softer," says Thanassis, "but not as tasty. From April to October when the milk is thinner but more fragrant, the feta is firmer."

As Thanassis takes a fresh piece of feta from the barrel, salty milk drips through his fingers. He gives us some to taste, along with a hot piece of freshly baked bread from the wood oven, and reminds us that, like all great cheeses, feta has been widely imitated but never equaled. Later, feta ranked prominently among the delicious Mediterranean dishes served during lunch at his house nearby.

Now that you know a little more about the making of this unique cheese, why not broaden your gastronomic experience and taste some fresh, salty feta? As you do so, think of all the time and effort that went into producing that delicious cheese—from the day the goat or sheep was milked to the moment the finished product was placed before you.

### IN OUR NEXT ISSUE

**A Century of Atrocities  
—Is It Time to Forget?**

**How Much Does Religion  
Interest Young People?**

**Your Dress and Grooming  
—Does It Matter to God?**

## WATCHING THE WORLD

### Oceans in Peril

More than 1,600 marine scientists and conservation biologists from 65 nations have endorsed a "call for action" to protect the oceans from further damage, reports *The Journal of Commerce*. "The sea is in real trouble, much more trouble than we previously thought," says marine ecologist Elliot Norse. One example cited is a 7,000-square-mile tract of ocean in the Gulf of Mexico known as the dead zone. As its name implies, the dead zone is devoid of fish, shrimp, and most other marine wildlife. Scientists trace the problem to large populations of algae that feed off nutrient-rich runoff from the Mississippi River. When the algae die, they fall to the ocean floor. As bacteria begin decomposing the dead algae, the ocean's bottom is depleted of oxygen. Marine scientist Dr. Nancy Rabalais says: "Anything that can't move out eventually dies."

### Organ Donors

Do you want others to claim your organs when you die? That is the question facing many Brazilians since a new law took effect on January 1, 1998. The law states that all Brazilians over the age of 18 will automatically become organ donors unless they sign documents asking to be exempt. But "there are ample signs most Brazilians would prefer remaining intact after they die," reports *The Miami Herald*. "In the last six months, three out of every four people getting drivers' licenses rejected organ donorship." Why? Some people fear that doctors might be pressured into prematurely declar-

ing patients brain-dead in order to harvest their organs.

### A Bad Year for Fortune-Tellers

Fortune-tellers in Germany were all but struck with "blindness" in 1997, reports the *Nassauische Neue Presse* of Frankfurt. Out of approximately 70 predictions analyzed by the Association for Scientific Research Into the Parasciences (GWUP), not one came true.



The really surprising events of 1997 remained concealed from the clairvoyants. Not one psychic, for instance, foretold the sudden death of Princess Diana. Many fortune-tellers have become so cautious that they only attempt to foretell the development of trends, such as economic and political troubles. These are "things each newspaper reader could have come up with anyway," says Edgar Wunder of the GWUP.

### High-Risk Sex

From 1994 to 1996, researchers at Rhode Island Hospital and Boston City Hospital, in the United States, questioned 203 patients infected with HIV about their sexual activity. What did that survey indicate? "Four of every ten people infected with H.I.V. failed

to inform their sex partners about their condition, and nearly two-thirds of those did not always use a condom," reports *The New York Times*. Such withholding of information about HIV infection is common, say researchers. "This is not a problem of knowledge," says Dr. Michael Stein of Brown University Medical School, in Providence, Rhode Island. "People understand their H.I.V. risk of transmission. [They] are not ignorant of these subjects. This is a matter of personal responsibility."

### Obesity and Heart Disease

"The most effective strategy for prevention of CAD [coronary artery disease] in adulthood may be prevention of obesity in childhood," reports *The Journal of the American Medical Association*. Health officials have known for some time that early obesity increases the risk of hypertension, diabetes, hyperlipidemia (an excess of fat in the blood), coronary heart disease, and other chronic illnesses. But in spite of doctors' suggestions to limit the intake of fat and to engage in regular exercise, it is said that one third of all North Americans are overweight or obese. "How much data do we need before we as a society take action to prevent obesity by imparting improved diet and exercise behaviors in our children?" asks Linda Van Horn of Northwestern University Medical School in Chicago. "The potential benefits are immeasurable. Left untreated, the cardiovascular consequences are predictable, disabling, and expensive." However, the results of a more recent study appear-

ing in *The New England Journal of Medicine* say that obesity poses only a moderate threat to one's health. It found that obesity "increases the likelihood of premature death but not as much as many medical experts had suspected," reports *The New York Times*.

### Disappearing Forests

Almost two thirds of the forests that covered the earth before human civilization began making inroads have now disappeared, says the World Wide Fund for Nature (WWF). Despite man's strenuous efforts to alert people to the problem, deforestation in this decade has increased to the point where several countries could soon be without any natural forests. The clearing of woodlands to provide timber and arable land decimates plant and animal species. Moreover, tree-burning releases carbon dioxide into the earth's atmosphere, which many fear will lead to global warming. The WWF urges protection of at least 10 percent of all types of forests around the world by the year 2000, reports London's *Guardian* newspaper.

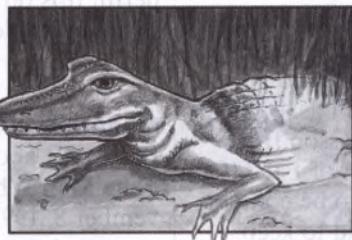
### Worldwide Food Shortage Projected

According to a study by Johns Hopkins University, "unless population growth slows and farm production increases dramatically, by 2025 there won't be enough food for the world's projected 8 billion hungry mouths," reports an Associated Press dispatch. The researchers forecast that "if fertility rates do not drop to roughly two children per woman," food production will have to double by 2025 to provide "access to enough safe and nu-

tritious food" for people to remain healthy. Adding to the problem are shortages of water, pollution of land, the steady loss of topsoil to erosion, and changes in climate. Even today, annually some 18 million people die from starvation, even though enough food is produced to support the nearly 6 billion people now living on earth.

### The Disappearing Orinoco Alligator

The alligators of Venezuela's Orinoco River are in danger, according to *Estampas* magazine of Caracas. The creatures have been hunted for their skins since 1930. At that time "the population of alligators in Venezuela was greater than that of humans," states the magazine. But between 1931 and 1934,



almost three million pounds of alligator skins, representing at least 4.5 million alligators, were exported. By 1950, "after years of nonstop hunting," the alligator population had been depleted so much that "only" 66,000 pounds could be exported. Today, there remain fewer than 3,000 Orinoco alligators, and experts say that they, along with 312 other Venezuelan animal species, are threatened with extinction by humans.

### Awesome Star Power

A recent Hubble image provides further evidence that a

star in our galaxy is a rare type of star called "a luminous blue variable." According to astronomers, the brilliant star and surrounding nebula is shaped like a gun, hence it has been named the Pistol. It is estimated that the Pistol is at least 60 times as massive as our Sun and nearly 10 million times as powerful. It could be "the most energetic star in the heavens," says *Science News* magazine. But because of intervening dust, the star can only be detected with infrared detectors. That explains why the Pistol, which is located 25,000 light-years from Earth, was not discovered until the early 1990's. Only six other stars of this type have been detected in our galaxy.

### Driving and Phoning —A Risky Combination

Car drivers who telephone while at the wheel may make serious errors without ever being aware of them. This was the conclusion reached in a test carried out on behalf of the General Automobile Club of Germany. Drivers were asked to negotiate a test course three times. The first time, they did not use the telephone. The second time, they used a hands-free mobile phone system; and the third time, a hand-held phone. How well did the test drivers perform? On the average, drivers not telephoning made 0.5 mistakes in braking and staying in their lane, those using a hands-free phone 5.9, and drivers using a hand-held phone 14.6. Hence, reports the *Süddeutsche Zeitung*, the study concluded that the use of hand-held phones when driving "presents a considerable safety risk."

## FROM OUR READERS

**Children and War** With a deep sense of sadness, I read the series "What War Does to Children." (October 22, 1997) I too was a child of war. During World War II, I spent four and a half years in the Japanese concentration camps Ngawi and Bandung. At the age of ten, I was separated from my family and labored seven days a week in the tropical sun—undernourished and suffering from beriberi and dysentery. Still, my experiences seem like a picnic compared with the indescribable cruelty millions of children experience today. May we never feel discouraged that Jehovah has allowed time for people worldwide, including children of war, to come to a knowledge of his comforting promises!

R. B., United States

**Pot of Fat** I was feeling very sad and sorry for myself. A year ago my husband decided he didn't want a Christian for a wife, and he put my son and me out of the beautiful house he said he had bought for me. I went into poverty. My life seemed hopeless, and I asked Jehovah for help. Well, I received a lesson from the article "A Lesson From a Pot of Fat." (October 22, 1997) It reminded me to be content with sustenance and covering and to keep Kingdom interests first.

K. P., United States

**Sibling Problems** The article "Young People Ask . . . Why Does My Brother Get All the Attention?" (October 22, 1997) came exactly when we needed it. It helped us realize that unequal treatment is not necessarily injustice. We now see that our parents have good reasons for giving our siblings extra attention. We really agree with the article.

B. K., H. K., and G. U. O., Nigeria

**Noise Pollution** I have worked in a large factory for several years, and some of my colleagues and I have suffered the effects of the

loud noise there. I took the November 8, 1997, issue to work ("Noise—Our Worst Pollutant?"), and the management has decided to take necessary precautions to safeguard the health of all the workers.

R. P., Italy

I have been upset for several years because of the noise my neighbor makes. He runs a business until late at night. I have sometimes become very angry. But I was strengthened to know that there are Christian brothers and sisters who are also victimized by noise but who are coping by exercising self-control.

T. O., Japan

I have a neighbor who disturbs me by making phone calls in the early hours of the morning. These articles have given me wonderful tips on how I can deal with this matter in an amicable, Christian manner.

J. R., England

**Magellan** I really appreciated and enjoyed the article about Ferdinand Magellan entitled "The Man Who Unlocked the World." (November 8, 1997) When the article came out, we were learning about him in my fifth-grade class. I learned more about him from the article than I did from my social studies book. I gave my teacher my personal copy of the magazine, and she loved it! A couple of days later, I got the magazine back, and it had a note on it thanking me again.

B. V., United States

It was wonderful to be able to imagine how Ferdinand Magellan, such a determined man, overcame hostility and various difficulties to realize one of the greatest achievements in history. Thank you for writing on a fascinating subject.

M. E., Italy

# Be Selective in Choosing Entertainment

What effect does entertainment have on children? Alvin Poussaint, an educator and doctor who has worked with children for some 30 years, is convinced that watching films containing sex and violence teaches youths that such behavior is normal. He also points out another danger: "I've seen children return home from such movies to become fearful—or extremely aggressive. I've seen others regress to clinging or thumb sucking or bed-wetting." According to this doctor, experts have documented other events that can cause such behaviors—physical or sexual abuse or living in a war zone, to name just a few. "None of us would willingly put a child into those situations," he explains, "yet we do not act to keep them from

watching movies about things we would be horrified to have them see off the screen."

Christians have good reason to be selective and to be sure that the entertainment they choose does not violate Bible principles. For example, Psalm 11:5 states: "Jehovah himself examines the righteous one as well as the wicked one, and anyone loving violence His soul certainly hates." And the Christian apostle Paul wrote: "Deaden, therefore, your body members that are upon the earth as respects fornication, uncleanness, sexual appetite, hurtful desire, and covetousness . . . Put them all away from you, wrath, anger, badness, abusive speech, and obscene talk out of your mouth."—Colossians 3:5, 8.

Parents, therefore, should be cautious that the entertainment they choose for their children—and for themselves—does not promote "the works of the flesh." (Galatians 5:19-21) They should be selective, considering both the quality and the quantity of their entertainment.—Ephesians 5:15-17.



# 'They Broaden Our Outlook'

The head of the foreign-languages department at the Karakol Institute of Management in Kyrgyzstan, a former republic of the Soviet Union, praised the publications of Jehovah's Witnesses. He wrote the following to the branch office of Jehovah's Witnesses in Russia:

"Your books and brochures help us very much in teaching English, German, Russian, Kyrgyz and Turkic languages under the conditions in today's social and economic chaos. . . . Your brochures are in popular demand by those studying practical translation . . . Thank you for the books *Life—How Did It Get Here? By Evolution or by Creation?*, *The Secret of Family Happiness*, and *Questions Young People Ask—Answers That Work*.

"We have many Jehovah's Witnesses among the students. They read the *Awake!* articles with interest and use them when given homework."

The writer especially singled out *Awake!* for praise: "Thank you for the interesting and informative articles. . . . They instill hope in us and broaden our general outlook. . . . All of us read with pleasure the section of *Awake!* 'Watching the World.'"

