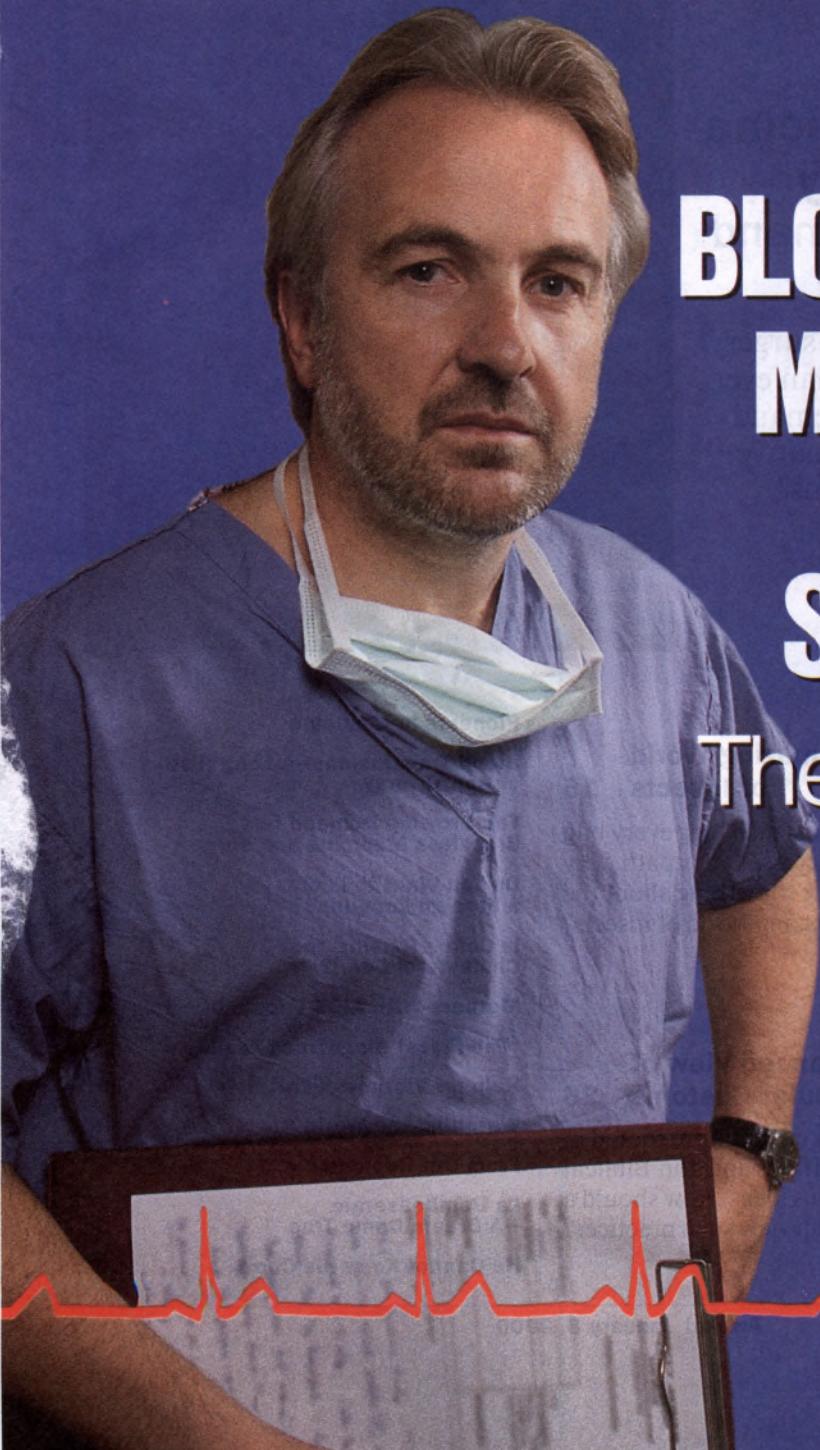


Awake!

January 8, 2000



BLOODLESS MEDICINE and SURGERY

**The Growing
Demand**

Average Printing 20,381,000
Published in 83 Languages

Bloodless Medicine and Surgery The Growing Demand **3-11**

Bloodless medicine and surgery is now more common than ever. Why is there such a demand for it? Is it a safe alternative to blood transfusions?



The Amazing World of Insects **15**

Instead of squashing every bug that crosses your path, why not learn something about the amazing world of insects?



A Balanced View of Popular Customs **26**

Many customs are rooted in superstitions and non-Biblical religious ideas. How should a Christian view such practices?

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Pioneers in Medicine

AT AGE 61, José, a Belgian from the small town of Oupeye, was told that he would need a liver transplant. "It was the shock of my life," he says. Just four decades ago, liver transplants were unthinkable. Even in the 1970's, the survival rate was only about 30 percent. Today, however, liver transplants are routinely performed, with a much higher success rate.

But there is still a major drawback. Since liver transplants often involve excessive bleeding, doctors usually administer blood transfusions during the operation. Because of his religious convictions, José did not want

blood. But he did want the liver transplant. Impossible? Some might think so. But the chief surgeon felt that he and his colleagues had a good chance of operating successfully without blood. And that is precisely what they did! Just 25 days after his operation, José was back home with his wife and daughter.*

Thanks to the skills of those whom *Time* magazine calls "heroes of medicine," bloodless medicine and surgery is now more common than ever. But why is there such a demand for it? To answer that question, let us examine the troubled history of blood transfusions.

Worldwide, there are currently more than 90,000 doctors who have made it known that they are willing to treat Jehovah's Witnesses without blood

* Jehovah's Witnesses view organ transplant operations as a matter of individual conscience.



Blood Transfusions

A Long History of Controversy

"If red blood cells were a new drug today, it would be very difficult to get it licensed."

—Dr. Jeffrey McCullough.

IN THE winter of 1667, a violent madman named Antoine Mauroy was brought to Jean-Baptiste Denis, eminent physician to King Louis XIV of France. Denis had the ideal "cure" for Mauroy's mania—a transfusion of calf's blood, which he thought would have a calming effect on his patient. But things did not go well for Mauroy. Granted, after a second transfusion, his condition improved. But soon madness again seized the Frenchman, and before long he was dead.

Even though it was later determined that Mauroy actually died from arsenic poisoning, Denis' experiments with animal blood provoked a heated controversy in France. Finally, in 1670 the procedure was banned. In time, the English Parliament and even the pope followed suit. Blood transfusions fell into obscurity for the next 150 years.

Early Hazards

In the 19th century, blood transfusions made a comeback. Leading the revival was an English obstetrician named James Blundell.

With his improved techniques and advanced instruments—and his insistence that only *human* blood should be used—Blundell brought blood transfusions back into the limelight.

But in 1873, F. Gesellius, a Polish doctor, slowed the transfusion revival with a frightening discovery: More than half the transfusions performed had ended in death. Upon learning this, eminent physicians began denouncing the procedure. The popularity of transfusions once again waned.

Then, in 1878, French physician Georges Hayem perfected a saline solution, which he claimed could serve as a substitute for blood. Unlike blood, the saline solution had no side effects, did not clot, and was easy to transport. Understandably, Hayem's saline solution came to be widely used. Strangely, however, opinion soon favored blood again. Why?

In 1900, Austrian pathologist Karl Landsteiner discovered the existence of blood

Awake!

Why Awake! Is Published *Awake!* is for the enlightenment of the entire family. It shows how to cope with today's problems. It reports the news, tells about people in many lands, examines religion and science. But it does more. It probes beneath the surface and points to the real meaning behind current events, yet it always stays politically neutral and does not exalt one race above another. Most important, this magazine builds confidence in the Creator's promise of a peaceful and secure new world that is about to replace the present wicked, lawless system of things.

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

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World War II saw an increase in the demand for blood

types, and he found that one type of blood is not always compatible with another. No wonder so many transfusions in the past had ended in tragedy! Now that could be changed, simply by making sure that the blood type of the donor was compatible with that of the recipient. With this knowledge, physicians renewed their confidence in transfusions—just in time for World War I.

Blood Transfusions and War

During World War I, blood was liberally transfused into wounded soldiers. Of course, blood clots quickly, and previously it would have been all but impossible to transport it to the battlefield. But early in the 20th century, Dr. Richard Lewisohn, of Mount Sinai Hospital in New York City, successfully ex-



perimented with an anticoagulant called sodium citrate. This exciting breakthrough was regarded by some doctors as a miracle. "It was almost as if the sun had been made to stand still," wrote Dr. Bertram M. Bernheim, a distinguished physician of his day.

World War II saw an increase in the demand for blood. The public was bombarded with posters bearing such slogans as "Give Blood Now," "Your Blood Can Save Him," and "He Gave His Blood. Will You Give Yours?" The call for blood brought great response. During World War II, some 13,000,000 units were donated in the United States. It is estimated that in London more than 68,500 gallons were collected and distributed. Of course, blood transfusions carried a number of health risks, as soon became clear.

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

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Blood Transfusions—No Medical Standard

Each year in the United States alone, more than 11,000,000 units of red cells are transfused into 3,000,000 patients. In view of that large number, one would assume that there is a strict standard among physicians when it comes to administering blood. Yet, *The New England Journal of Medicine* notes that there is surprisingly little data "to guide decisions about transfusions." Indeed, there is a wide variation in practice, not only regarding precisely what is transfused and how much but also regarding whether a transfusion is administered at all. "Transfusion depends on the doctor, not on the patient," says the medical journal *Acta Anæsthesiologica Belgica*. Considering the above, it is hardly surprising that a study published in *The New England Journal of Medicine* found that "an estimated 66 percent of transfusions are administered inappropriately."

Blood-Borne Disease

After World War II, great strides in medicine made possible some surgeries that were previously unimaginable. Consequently, a global multibillion-dollar-a-year industry sprang up to supply the blood for transfusions, which physicians began to consider standard operating procedure.

Soon, however, concern over transfusion-related disease came to the fore. During the Korean War, for example, nearly 22 percent of those who received plasma transfusions developed hepatitis—almost triple the rate during World War II. By the 1970's, the U.S. Centers for Disease Control estimated the number of deaths from transfusion-related hepatitis at 3,500 a year. Others put the figure ten times higher.

Thanks to better screening and more careful selection of donors, the number of cases of hepatitis-B contamination declined. But then a new and sometimes fatal form of the virus—hepatitis C—took a heavy toll. It is estimated that four million Americans contracted the virus, several hundred thousand of them through blood transfusions. Granted, rigorous testing eventually reduced the prevalence of hepatitis C. Still, some fear that new dangers will appear and will only be understood when it is too late.

Another Scandal: HIV-Contaminated Blood

In the 1980's, it was found that blood can be contaminated with HIV, the virus that leads to AIDS. At first, blood bankers were loathe to consider that their supply might be tainted. Many of them initially greeted the HIV threat with skepticism. According to Dr. Bruce Evatt, "it was as though someone had wandered in from the desert and said, 'I've seen an extraterrestrial.' They listened, but they just didn't believe it."

Nevertheless, country after country has seen scandals break out exposing HIV-contaminated blood. It is estimated that in France, between 6,000 and 8,000 people were infected with HIV through transfusions that were administered between 1982 and 1985. Blood transfusions are held responsible for 10 percent of HIV infections throughout Africa and for 40 percent of the AIDS cases in Pakistan. Today, because of improved screening, HIV transmission through blood transfusions is rare in developed nations. However, such transmission continues to be a problem in developing nations that lack screening processes.

Understandably, in recent years there has been an increased interest in bloodless medicine and surgery. But is this a safe alternative?

The Growing Demand for Bloodless Medicine and Surgery

"All those dealing with blood and caring for surgical patients have to consider bloodless surgery."—Dr. Joachim Boldt, professor of anesthesiology, Ludwigshafen, Germany.

THE tragedy of AIDS has compelled scientists and physicians to take additional steps to make the operating room a safer place. Obviously, this has meant more stringent blood screening. But experts say that even these measures do not ensure zero-risk transfusions. "Even as soci-

ety expends great resources on making the blood supply safer than ever," says the magazine *Transfusion*, "we believe patients will still try to avoid allogeneic [donor] transfusions simply because the blood supply can never be completely safe."

Not surprisingly, many doctors are



Dr. Joachim Boldt

What Some Doctors Say

'Bloodless surgery is not only for Jehovah's Witnesses but for all patients. I think that every doctor should be engaged in it.'—Dr. Joachim Boldt, professor of anesthesiology, Ludwigshafen, Germany.

"While blood transfusions are safer today than in the past, they still pose risks, including immune reactions and contracting hepatitis or sexually transmitted diseases."

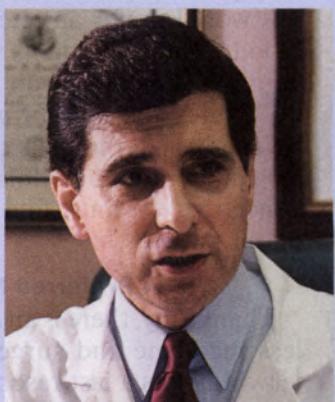
—Dr. Terrence J. Sacchi, clinical assistant professor of medicine.

"Most physicians have knee-jerk reactions with transfusions and just give them out liberally and indiscriminately. I don't."

—Dr. Alex Zapolanski, director of cardiac surgery at the San Francisco Heart Institute.

"I don't see any conventional abdominal operation that in a normal patient routinely requires blood transfusion."

—Dr. Johannes Scheele, professor of surgery, Jena, Germany.



Dr. Terrence J. Sacchi

Bloodless Medicine and Surgery

Some of the Methods

Fluids: Ringer's lactate solution, dextran, hydroxyethyl starch, and others are used to maintain blood volume, preventing hypovolemic shock. Some fluids now being tested can transport oxygen.



Drugs: Genetically engineered proteins can stimulate the production of red blood cells (erythropoietin), blood platelets (interleukin-11), and various white blood cells (GM-CSF, G-CSF). Other medications greatly reduce blood loss during surgery (aprotinin, antifibrinolytics) or help to reduce acute bleeding (desmopressin).

Biological hemostats: Collagen and cellulose woven pads are used to stop bleeding by direct application. Fibrin glues and sealants can plug puncture wounds or cover large areas of bleeding tissue.



becoming wary of administering blood. "Blood transfusions are basically no good, and we are very aggressive in avoiding them for everybody," says Dr. Alex Zapolanski, of San Francisco, California.

The general public too is becoming aware of the dangers of transfusions. Indeed, a 1996 poll revealed that 89 percent of Canadians would prefer an alternative to donated blood. "Not all patients will refuse homologous transfusions as do Jehovah's Witnesses," states the *Journal of Vascular Surgery*. "Nonetheless, the risks of disease transmission and immunomodulation offer clear evidence that we must find alternatives for all of our patients."

A Preferred Method

Thankfully, there is an alternative—bloodless medicine and surgery. Many patients view it not as a last resort but as a preferred

treatment, and with good reason. Stephen Geoffrey Pollard, a British consultant surgeon, notes that the morbidity and mortality rates among those who receive bloodless surgery are "at least as good as those patients who receive blood, and in many cases they are spared the postoperative infections and complications often attributable to blood."

How did bloodless medical treatment develop? In one sense the question is rather odd, since bloodless medicine actually predates the use of blood. Indeed, it was not until the early 20th century that transfusion technology had advanced to the point where it was routinely used. Nevertheless, in recent decades some have popularized the field of bloodless surgery. For example, during the 1960's noted surgeon Denton Cooley performed some of the first open-heart operations without the use of blood.



Blood salvage: Salvaging machines recover blood that is lost during surgery or trauma. The blood is cleansed and can be returned to the patient in a closed circuit. In extreme cases, liters of blood can be recovered using such a system.

Surgical techniques: Thorough operative planning, including consultation with experienced clinicians, helps the surgical team to avoid complications. Prompt action to stop bleeding is essential. Delays greater than 24 hours can greatly increase patient mortality. Dividing large surgeries into several smaller ones decreases total blood loss.



Surgical tools: Some devices cut and seal blood vessels simultaneously. Other devices can seal bleeding on large areas of tissue. Laparoscopic and minimally invasive instruments allow surgeries to be performed without the blood loss associated with large incisions.

With the rise of hepatitis among transfusion recipients during the 1970's, many doctors began looking for alternatives to blood. By the 1980's a number of large medical teams were performing bloodless surgery. Then, when the AIDS epidemic broke out, these teams were repeatedly consulted by others who were eager to adopt the same techniques. During the 1990's many hospitals developed programs that offer bloodless options to their patients.

Doctors have now successfully applied bloodless techniques during operations and emergency procedures that traditionally required transfusions. "Major cardiac, vascular, gynaecological and obstetrical, orthopaedic, and urological surgery can be performed successfully without using blood or blood products," notes D.H.W. Wong, in the *Canadian Journal of Anaesthesia*.

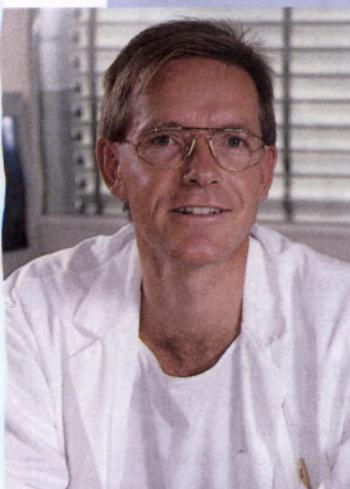
One advantage of bloodless surgery is that it promotes better-quality care. "The surgeon's skill is of the greatest importance in the prevention of blood loss," says Dr. Benjamin J. Reichstein, a director of surgery in Cleveland, Ohio. A South African legal journal says that in certain instances surgery without blood can be "quicker, cleaner and less expensive." It adds: "Certainly the after-care treatment in many instances has proved cheaper and less time-consuming." These are just a few of the reasons why some 180 hospitals around the world now have programs specializing in bloodless medicine and surgery.

Blood and Jehovah's Witnesses

For Bible-based reasons, Jehovah's Witnesses refuse blood transfusions.* But they

* See Leviticus 7:26, 27; 17:10-14; Deuteronomy 12:23-25; 15:23; Acts 15:20, 28, 29; 21:25.

Bloodless Medicine The New "Standard of Care"?



Dr. Donat R. Spahn
professor of
anesthesiology,
Zurich, Switzerland

AWAKE! discussed the benefits of bloodless medicine and surgery with four experts in the field.

Besides patients who for religious reasons refuse blood transfusions, who else are showing interest in bloodless medicine?

Dr. Spahn: In our center those requesting bloodless medicine are usually extremely well-informed patients.

Dr. Shander: In 1998 the number of patients who refused blood for personal reasons exceeded the number of patients who refused blood for religious reasons.

Dr. Boyd: There are, for example, patients with cancer. It has been shown many times that if they don't receive blood, they progress better and they don't have as much recurrence of the disease.

Dr. Spahn: We often treat university professors and their families without using blood. Even the surgeons request that we avoid transfusions! One surgeon, for example, came to us about his wife, who needed an operation. He said: "Just make sure of one thing—that she does not get a blood transfusion!"

Dr. Shander: Members of my anesthesia department said: 'These patients who are not getting blood are doing just as well and maybe even better. Why do we have to have two standards of care? If this is the best care, we should apply it to everybody.' So now we are looking for bloodless medicine to become the standard of care.

Mr. Earnshaw: It just so happens that bloodless surgery is particularly relevant to Jehovah's Witnesses. However, this is how we want to treat everybody.

Is the bloodless approach more expensive or less expensive?

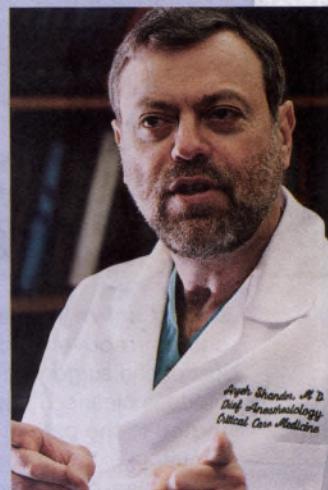
Mr. Earnshaw: This is cost saving.

Dr. Shander: There is a 25-percent reduction of cost with bloodless medicine.

Dr. Boyd: If only for that reason, we should use it.

How far have we advanced in the use of bloodless medical management?

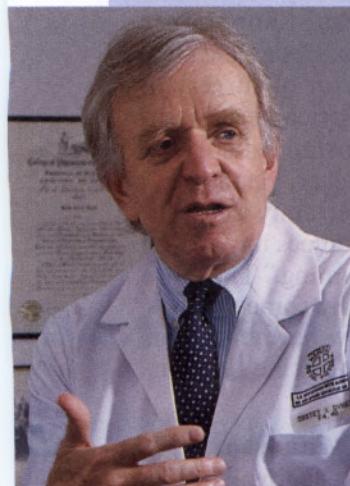
Dr. Boyd: I think it's very progressive. It's by no means at an end. Each time we turn around, we find some good new reason not to use blood.



Dr. Aryeh Shander
assistant clinical
professor of
anesthesiology,
United States



Mr. Peter Earnshaw,
FRCS, consultant
orthopedic surgeon,
London, England



Dr. Mark E. Boyd
professor of
obstetrics and
gynecology, Canada

do accept—and vigorously pursue—medical alternatives to blood. "Jehovah's Witnesses actively seek the best in medical treatment," said Dr. Richard K. Spence, when director of surgery at a New York hospital. "As a group, they are the best educated consumers the surgeon will ever encounter."

Doctors have perfected many bloodless surgery techniques on Jehovah's Witnesses. Consider the experience of cardiovascular surgeon Denton Cooley. Over a period of 27 years, his team performed bloodless open-heart surgery on 663 of Jehovah's Witnesses. The results clearly demonstrate that cardiac operations can be successfully performed without the use of blood.

True, many have criticized Jehovah's Witnesses for their refusal of blood. But a guide published by the Association of Anaesthetists of Great Britain and Ireland calls the Witnesses' position "a sign of respect for life." In truth, the Witnesses' rigorous stand has been a major force behind safer medical treatment becoming available for all. "Jehovah's Witnesses in need of surgery have shown the way and exerted pressure for improvements in an important sector of the Norwegian health service," writes Professor Stein A. Evensen, of Norway's National Hospital.

To assist doctors in providing treatment without the use of blood, Jehovah's Witnesses have developed a helpful liaison service. Presently, more than 1,400 Hospital Liaison Committees worldwide are equipped to provide doctors and researchers with medical literature from a data base of over 3,000 articles related to bloodless medicine and surgery. "Not only Jehovah's Witnesses, but patients in general, are today less likely to be given unnecessary blood transfusions because of the work of the Witnesses' Hospital Liaison Committees," notes Dr. Charles

Baron, a professor at Boston College Law School.*

The information on bloodless medicine and surgery that has been compiled by Jehovah's Witnesses has been of benefit to many in the medical field. For example, in preparing material for a book entitled *Autotransfusion: Therapeutic Principles and Trends*, the authors asked Jehovah's Witnesses to provide them with information about alternatives to blood transfusion. The Witnesses gladly granted their request. With gratitude the authors later stated: "In all our reading on this subject, we have never seen such a concise, complete list of strategies to avoid homologous blood transfusion."

Progress in the medical field has caused many to consider bloodless medicine. Where will this lead us? Professor Luc Montagnier, discoverer of the AIDS virus, states: "The evolution of our understanding in this field shows that blood transfusions must one day die out." In the meantime, alternatives to blood are already saving lives.

* By invitation, Hospital Liaison Committees also make presentations to hospital medical staff. In addition, if their assistance is specifically requested, they help patients to have early, open, and continual communication with the physician in charge.

The Patient's Role

- Talk to your doctor about nonblood alternatives *before* the need for treatment arises. This is especially important for pregnant women, parents with small children, and the elderly.
- Put your wishes down in writing, especially if a legal document is available for such a purpose.
- If your physician is not willing to treat you without blood, seek a physician who will comply with your wishes.
- Since some alternatives to blood require time to be effective, do not postpone seeking treatment if you know that you need an operation.

Do You Want to Learn A FOREIGN LANGUAGE?

BY AWAKE! CORRESPONDENT IN BRITAIN

"Easier said than done!" That is what many say about learning a foreign language, especially after giving it a try. Granted, learning another language is challenging, to say the least. But those who have succeeded say that it is well worth the effort.

THREE are many different reasons for learning a new language. Andrew, for example, planned to spend a vacation in France, and he wanted to be able to converse with the local people in their own tongue. Guido was born in England, but his family background is Italian. "I was only familiar with a dialect," he says, "so I wanted to learn to speak Italian properly." Jonathan's brother recently moved abroad and married a Spanish girl. "I wanted to speak with my new relatives in their native tongue when I visited my brother," Jonathan says.

But learning a foreign language can have other benefits. "It taught me to have empathy," says Louise. "Now I understand how foreigners feel when they arrive in a country where the language spoken is different from their own." For Pamela the benefits hit closer to home. Raised in England, she knew little Chinese—the language of her family. As a result, Pamela and her mother grew apart. "There wasn't much commun-

ication between us," Pamela confesses. "But now that I can speak Chinese, we are closer and our relationship has improved."

Aids to Success

What will you need in order to succeed in learning a foreign language? Many who have done so stress the following.

- **Motivation.** You need an incentive—a reason to pursue your goal. Students with high motivation generally do best.

- **Humility.** Don't expect too much of yourself—mistakes are inevitable, especially at first. "People are going to laugh," Alison says, "so keep your sense of humor!" Valerie agrees: "You're like a child learning to walk. Often you stumble, but you just have to get up and try again."

- **Patience.** "For me, the first two years were difficult, and at times I felt like giving up," admits David. Still, he acknowledges: "It gets easier!" Jill feels much the same way. "You don't think you've made progress until you look back," she says.

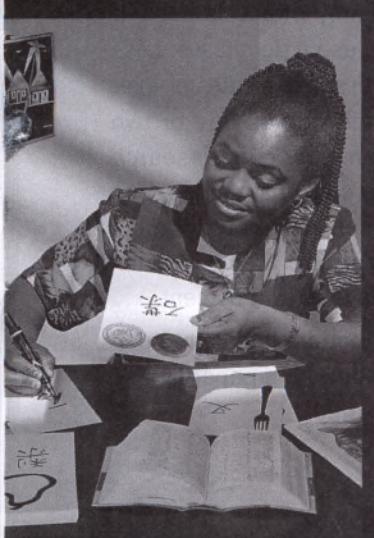


You can increase your vocabulary by . . .





... comparing your native language with the one you are learning



● **Practice.** A regular routine will help you to become fluent in the new language. Try to practice every day, even if for just a few minutes. As one textbook puts it, “‘a little and often’ is preferable to ‘a lot but seldom.’”

Helpful Tools

Are you ready to accept the challenge of learning a foreign language? If so, the following tools can enhance your progress.

● **Flash cards.** Each one has a word or a phrase on the front and the translation on the back. If these are not available where you live, you could make your own set, using file cards.

● **Instructional audiocassettes and videocassettes.** These can help you to hear the language spoken correctly. For example, while driving in his car, David learned the rudiments of Japanese by listening to an audiocassette of a tourist phrase book.

● **Interactive computer programs.** Some of these allow you to record your voice and compare your pronunciation with that of native speakers of the language.

● **Radio and television.** If there are radio or television programs broadcast in your area that use the language you are learning, why not tune in and see how much you can understand?

● **Magazines and books.** Try reading printed material in the new language, making sure that

the comprehension level is neither too high nor too low.*

Mastering the Language

Of course, sooner or later you will have to converse with those who speak the language. This does not require that you travel to a distant land. Instead, perhaps you can visit a foreign-language congregation of Jehovah's Witnesses in your own country.

In any event, your goal should be to learn to *think* in the new language, rather than simply to translate words and phrases from your mother tongue. Likely it will also help if you try to learn something about the customs and habits of the people who speak your new language. “There can be no real learning of a language without understanding something of the patterns and values of the culture of which it is a part,” says language expert Robert Lado.

A final thought: Do not be discouraged when your progress seems slow. Learning a new language is, after all, a continual process. “I never stop learning,” says Jill, who learned sign language 20 years ago. “The language is always developing.”

So do you want to learn a foreign language? If you do, be ready to embark on a most challenging—yet richly rewarding—endeavor.

* *Awake!* is now available in 83 languages, and its companion, *The Watchtower*, is printed in 132 languages. Many have found the clear writing in these journals to be helpful when learning a new language.

IS COFFEE RAISING YOUR CHOLESTEROL LEVEL?

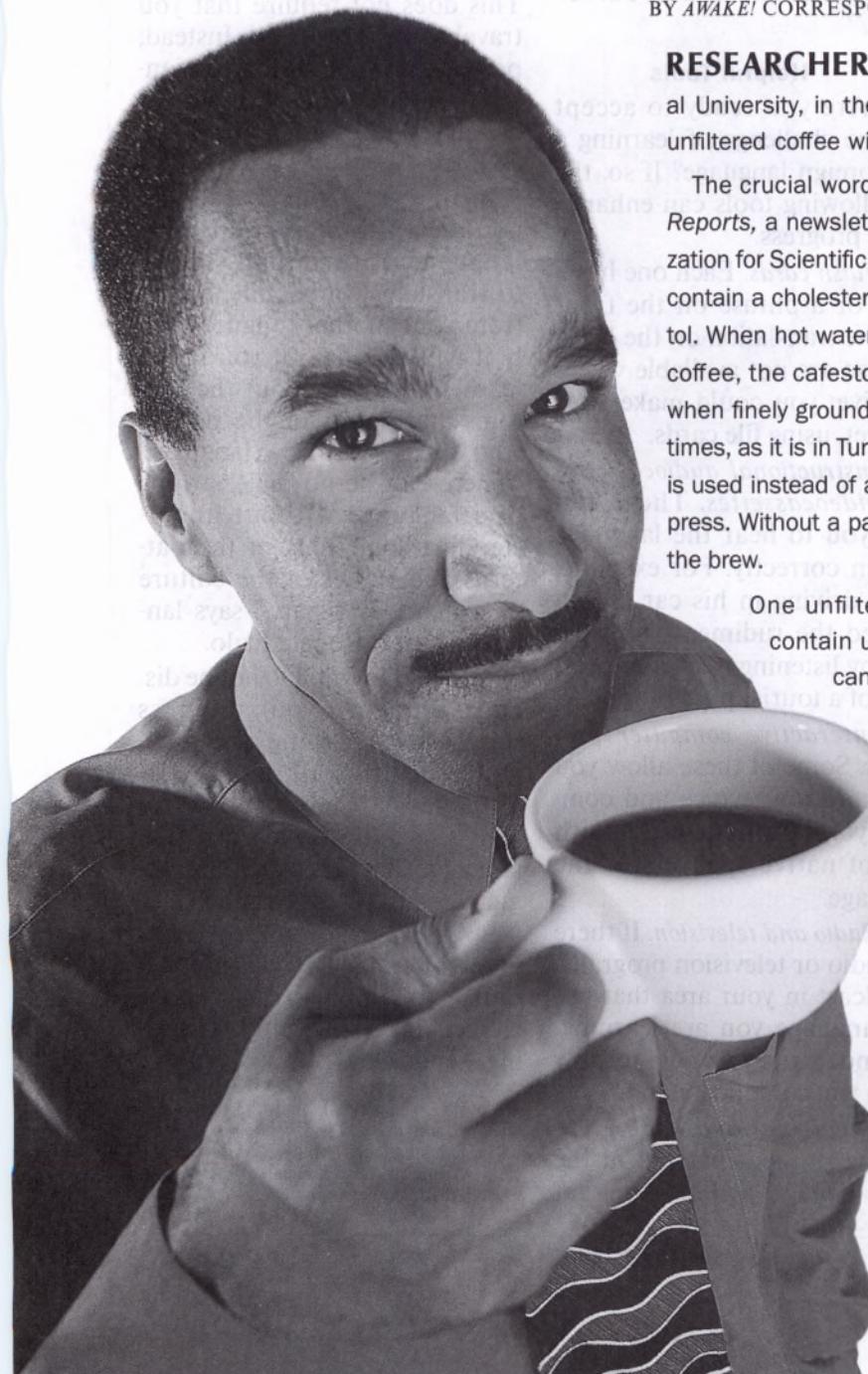
BY AWAKE! CORRESPONDENT IN BRAZIL

RESEARCHERS at the Wageningen Agricultural University, in the Netherlands, say that drinking unfiltered coffee will raise your cholesterol level.

The crucial word is "unfiltered." Why? Research Reports, a newsletter from the Netherlands Organization for Scientific Research, says that coffee beans contain a cholesterol-raising substance called cafestol. When hot water is poured directly on the ground coffee, the cafestol is extracted. The same is true when finely ground coffee is boiled in water several times, as it is in Turkish coffee, or when a metal filter is used instead of a paper filter, such as in a French press. Without a paper filter, the cafestol ends up in the brew.

One unfiltered cup of coffee, which may contain up to four milligrams of cafestol, can cause the cholesterol level to rise by about 1 percent. Espresso also contains cafestol, since it is made without a paper filter. However, its cholesterol-raising effect is less if you use a demitasse. Less espresso, less cafestol—perhaps as little as one or two milligrams per cup. Research Reports cautions, though, that five small cups of espresso a day can raise the body's cholesterol level by 2 percent.

The bottom line is that coffee made with a paper filter is cafestol free.



THE AMAZING WORLD OF *Insects*

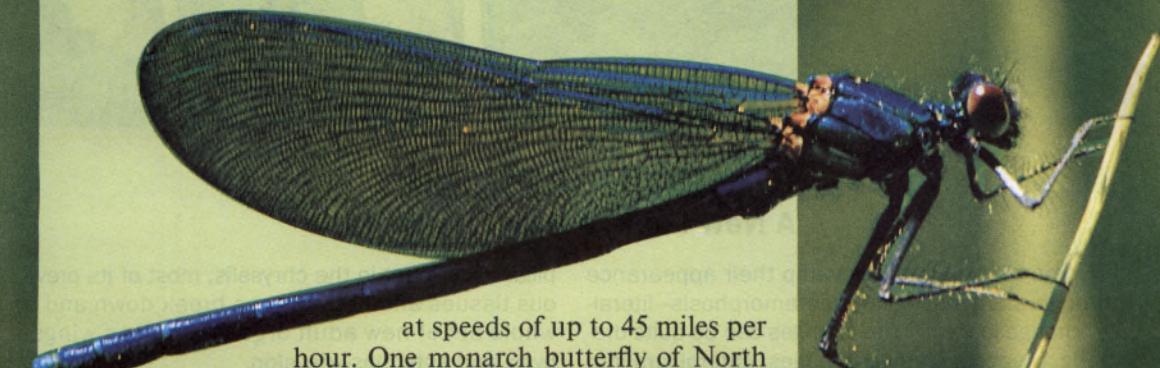
BY AWAKE! CORRESPONDENT IN SPAIN

DO YOU think that insects are nothing more than a nuisance? Would you like the world to be free of these annoying pests? Do you spray them, swat them, or step on them at every opportunity? Before declaring war on every bug that crosses your path, why not try to learn something about their world? After all, with a population that outnumbers humans by about 200,000,000 to 1, you can be sure that insects are here to stay!

A brief look at just a few of these amazing creatures might well convince you that insects deserve your respect.

Masters of Flight, Marvels of Sight

Many insects are masters of flight. Consider some examples. Mosquitoes can fly upside down. Some can even fly through the rain without getting wet—yes, actually dodging the raindrops! Some tropical wasps and bees buzz around



at speeds of up to 45 miles per hour. One monarch butterfly of North America logged 1,870 miles on its migration flight. Hover flies can beat their wings more than a thousand times per second—much faster than hummingbirds. Dragonflies can fly backward, a fact that has stimulated the curiosity—and close study—of researchers.

If you have ever tried to swat a fly, you know that these insects have exceptionally keen eyesight, which is coupled with a reflex that is ten times quicker than ours. Interestingly, the fly has a compound eye, containing thousands of six-sided lenses, each of which works independently. Likely, then, the fly's view is broken up into tiny bits.

Some insects can perceive ultraviolet light,

which is invisible to humans. Thus, what looks to us like a dull white butterfly is anything but dull to the male butterfly. Indeed, when seen in ultraviolet light, the female has attractive patterns that are ideal for grabbing the attention of courting males.

The eyes of many insects serve as a compass. Bees and wasps, for instance, can detect the plane of polarized light, enabling



METAMORPHOSIS A New Look, a New Life-Style

Some insects totally revamp their appearance through a process called metamorphosis—literally, “change in form.” The changes can be quite dramatic. Maggots change into flies, caterpillars into butterflies, and aquatic larvae into airborne dragonflies. Hundreds of thousands of insects undergo metamorphosis.

To produce such a transformation—comparable to converting a train into an airplane—huge modifications must take place inside the insect’s body. Consider the butterfly, for example. While the cater-

pillar is dormant in the chrysalis, most of its previous tissues and body organs break down and a whole set of new adult organs—such as wings, eyes, and antennas—develop.

Often, the transformation involves taking on a new life-style. For example, while in the larval stage, the dragonfly captures small fish or tadpoles; but when it becomes a free-flying adult, it changes its diet to insects. This is the equivalent of a man spending his first 20 years swimming in the sea and the rest of his life flying around like a bird.

them to locate the sun's position in the sky—even when it is hidden by clouds. Thanks to this ability, these insects can forage far from their nests and still find their way home unerringly.

Love Is in the Air

In the insect world, sounds and aromas are often used to find a mate—no small achievement if your life span is just a matter of

weeks and prospective mates are few and far between.

Female emperor moths find a suitor by emitting a scent that is so potent that a male can home in on its source from nearly seven miles away. His sensitive antennas can detect a single molecule of the scent.

Crickets, grasshoppers, and cicadas prefer to make themselves heard. Even we humans



PHOTOGRAPH BY
SITIKA MURTHY

Newly emerged from its pupa, the swallowtail stretches its wings

Could evolution orchestrate these incredible transformations? How could a caterpillar simply appear on the scene, programmed to transform itself into a butterfly? For that matter, which came first—the caterpillar or the butterfly? One cannot exist without the other, for only the butterfly breeds and lays eggs.

Surely, the process of metamorphosis gives convincing evidence of a Master Designer, the one whom the Bible identifies as the Creator of all things, Almighty God.—Psalm 104:24; Revelation 4:11.





Above: Pollen-eating beetle

Above right: A dew-covered leaf beetle warming up

Far right: Rhinoceros beetle



can hear the amorous cicada, as it converts its whole body into a sounding board. Why, a large group of courting cicadas can create a din that is louder than a pneumatic drill! In contrast, some females make no sound at all.

Waking Up and Warming Up

For humans who live in a cool climate, keeping warm is important. The same is true for cold-blooded insects that wake up each morning virtually frozen stiff. The sun is their ally, and they make the most of it.

Flies and beetles are attracted to flowers or leaves that bathe in the warmth of the sun during the early morning hours. Some beetles frequent Australian water lilies that act like botanical stoves, heating up their blossoms as much as 36 degrees Fahrenheit higher than the surrounding temperature. In contrast, butterflies have a built-in heating system. When they need to warm up, they open their wings, which serve as efficient solar panels, and incline them toward the sun.

You Name It, Insects Do It!

In the insect world, nearly every species has a different role, some of which are quite



African
short-horned
grasshopper



Horsefly

bizarre. Some moths, for example, seek life-giving salt and moisture by sucking the tears of buffalo. Other insects, equipped with a potent antifreeze, inhabit freezing mountain-tops and spend their lives scavenging bugs that have succumbed to the cold.

As wise King Solomon observed thousands of years ago, the ant is particularly industrious. Solomon wrote: "Go to the ant, you lazy one; see its ways and become wise. Although it has no commander, officer or ruler, it prepares its food even in the summer; it has gathered its food supplies even in the harvest." (Proverbs 6:6-8) The absence of a ruler is all the more remarkable considering that some colonies of ants may number upwards of 20 million! Yet, this insect "metropolis" functions perfectly, with each ant performing its specific task, so that the entire colony is supplied with food, protection, and housing.

Perhaps the most impressive example of insect housing is the termite mound. Some of them stand 25 feet tall.* These marvels of construction come with sophisticated air-conditioning and underground fungus gardens. Even more amazing, the termites that build these towering pyramids are blind!

Why We Need Insects

Insects play a vital role in our daily life. Indeed, about 30 percent of the foods we eat depend on pollination by bees, most of which are wild bees. But pollination is only one of the useful labors performed by insects. Insects keep the earth clean by means of an efficient recycling system, as they reprocess dead plants and animals. Thus, the soil is enriched, and nutrients that are liberated can make things grow. "Without insects," writes entomologist Christopher O'Toole in his book *Alien Empire*, "we would be inundated with dead plant and animal material."

Insects are sorely missed when their work is not done. Consider what happened in Aus-

* For humans, the equivalent would be a skyscraper that stands six miles high.

tralia, which has become home to millions of cattle. Herds inevitably scatter dung everywhere. Besides being unsightly, the manure provided a breeding site for the bush fly—a plague to both humans and cattle. So dung beetles were imported from Europe and Africa. The problem was solved!

Friends or Foes?

Admittedly, some insects eat crops and carry disease. But only about 1 percent of the world's insects are considered pests, and many of these do more damage because of the way man himself has altered the environment. The malaria-carrying mosquito, for example, rarely bothers the native people who live in the equatorial forest. It does wreak havoc, though, on towns bordering the forest, where stagnant water abounds.

Often, man can naturally control insect pests that attack crops, either by rotating crops or by introducing or conserving natural predators. Lowly ladybugs and lacewings effectively control plagues of aphids. And in Southeast Asia, public-health workers discovered that a couple of dragonfly larvae could keep a water-storage container free of mosquito larvae.

Even with their drawbacks, then, insects are an integral part of the natural world on which we depend. As Christopher O'Toole points out, while insects can survive without us, "we cannot survive without them."

IN OUR NEXT ISSUE

Life—A Product of Design

How Can I Avoid Dangers on the Internet?

Mapping the Heavens —Then and Now

CYNTHIA,* a woman living in the West Indies, had a choice between breast-feeding or bottle-feeding her newborn. The decision might seem simple. After all, for decades health experts have been promoting mother's milk as "the ultimate health food" for babies. Besides, bottle-fed babies in poor communities are about 15 times more likely to die from diarrheic disease than those who are breast-fed. In fact, the United Nations Children's Fund (UNICEF) reports that some 4,000 children die every day as a result of hazards associated with breast-milk substitutes.

In Cynthia's case, however, the decision regarding breast-feeding involved another danger altogether. Her husband had infected her with the human immunodeficiency virus (HIV), which causes AIDS. After giving birth, Cynthia learned that a child of an HIV-positive mother stands a 1-in-7 chance of becoming infected through breast milk.[#] Thus, she had to make an agonizing choice: expose her baby to the risks of breast-feeding or subject it to the hazards of bottle-feeding.

In parts of the world where the AIDS epidemic has hit the hardest, 2 or 3 out of every 10 pregnant women are HIV positive. In one country, more than half of all pregnant women tested were infected. "These alarming figures," reports UN Radio, "have had scientists racing to find a remedy." To respond to this threat, six UN organizations have pooled their experience, efforts, and resources to form the Joint United Nations Programme on HIV/AIDS, known as UNAIDS.[▲] But what UNAIDS has found is

* Not her real name.

[#] According to UNICEF, about 500 to 700 infants per day are infected by the breast milk of their HIV-positive mothers.

[▲] The six organizations are UNICEF, the United Nations Development Programme, the United Nations Population Fund, the World Health Organization, the World Bank, and the United Nations Educational, Scientific, and Cultural Organization. UNAIDS was established in 1995.



Mothers With AIDS Face a Dilemma

WHO/E. Hooper

that the solution to the AIDS dilemma is not so simple.

Complex Obstacles Blocking a Simple Solution

According to Edith White, a specialist on breast-feeding and mother-to-child transmission of HIV, health workers are advising HIV-positive women in industrialized countries not to breast-feed their babies, since this

nearly doubles the risk of the baby's being infected. The use of infant formula seems like a logical alternative. But in the developing world—where idealistic theories quickly give way to harsh realities—this simple solution is hard to carry out.

One of the obstacles is a social one. In countries where breast-feeding is the norm, women who bottle-feed their babies may be advertising the fact that they have been infected with HIV. A woman may fear that she will be blamed, abandoned, or even beaten when her condition becomes known. Some women in this circumstance feel that they have no choice but to breast-feed their baby to keep their HIV-positive condition a secret.

There are other obstacles too. For example, consider 20-year-old Margaret. She, like at least 95 percent of Uganda's village women, has never been tested for HIV. But Margaret has reason to be concerned. Her first child died, and her second is frail and sickly. Margaret is breast-feeding her third child ten times a day, despite the fact that she may have HIV. "I would never be able to feed my baby with formula," she says. Why not? The cost of feeding one child infant formula, Margaret says, is one and a half times the sum that a family in her village earns in an entire year. Even if formula were available free of charge, there would still be the problem of finding clean water to make the formula into safe baby food.*

Some of these obstacles can be reduced if HIV-infected mothers are provided proper sanitation, adequate amounts of breast-milk substitutes, and access to safe water. Expensive? Perhaps. Yet, surprisingly, making such provisions seems to be more a matter of setting priorities than finding funds. Indeed, the

* A recent study suggests that mixing formula feeding with breast-feeding may increase the risk of HIV infection and that breast milk may contain antiviral agents that help neutralize the virus. If this is true, exclusive breast-feeding—even with its risks—may be a safer choice. However, the findings of this study have yet to be confirmed.

UN reports that some of the world's poorest developing countries spend about twice as much on the military as they do on health and education.

What About Anti-AIDS Drugs?

UN scientists have reported that a simple and relatively inexpensive drug called AZT can significantly reduce mother-to-infant transmission of HIV. With the help of UNAIDS, the cost of this treatment has been lowered to \$50. Moreover, AIDS researchers announced in July of 1999 that treating HIV-positive mothers and their newborns with only \$3 worth of the drug nevirapine appears to be even more effective than AZT in preventing HIV transmission. Health experts say that nevirapine could prevent up to 400,000 newborns per year from beginning their life infected with HIV.

However, some criticize such drug treatments, claiming that since they are limited to preventing HIV transmission from mother to baby, the mother will eventually succumb to AIDS and leave the child orphaned. The UN counters that the grim alternative is letting babies contract HIV, thus condemning these innocent victims to a slow and sad death. They also contend that HIV-infected mothers may live on for years. Consider Cynthia, mentioned earlier. She learned that she had HIV in 1985, when her baby was born, but she did not become ill until eight years later. And even though her baby had HIV at birth, by age two the child was free of it.

The Bible's comforting assurance is that a truly safe environment and the lasting solution to scourges like AIDS are in sight. (Revelation 21:1-4) Jehovah God promises a new world in which "no resident will say: 'I am sick.'" (Isaiah 33:24) Jehovah's Witnesses would like to tell you about this lasting solution. For more information, please contact the publishers of this magazine or Jehovah's Witnesses in your community.

"The Finest Magazines Available"

THE EDITORS of *Awake!* recently received a letter from Lisel, an 18-year-old high school student in the United States. She wrote:

"I am enrolled in a college-level history course. There is an extensive research paper required, and I have chosen to write mine on the subject of Jehovah's Witnesses' moral resistance to Nazism in Germany under the Third Reich. I would like to request the list of references offered at the close of the *Awake!* article entitled 'Jehovah's Witnesses—Courageous in the Face of Nazi Peril,' which was in the issue of July 8, 1998. The article was thoroughly researched and was written with such logic that if I write my paper with only half of its passion and truth, the final product will be a great witness to the board that will assess my work."

"Thank you for continuing to produce the finest magazines available. In each issue, I receive 'writing lessons' superior to anything offered at my school, and this keeps me aiming higher with each paper I write. Please know that I appreciate your effort."

Center photo: Państwowe Muzeum Oświęcim-Brzezinka,
courtesy of the USHMM Photo Archives



HELP FOR VICTIMS OF TORTURE

"IT IS EASIER TO HEAL BROKEN BONES THAN TO HEAL A BROKEN SOUL."—Dr. Inge Genefke.

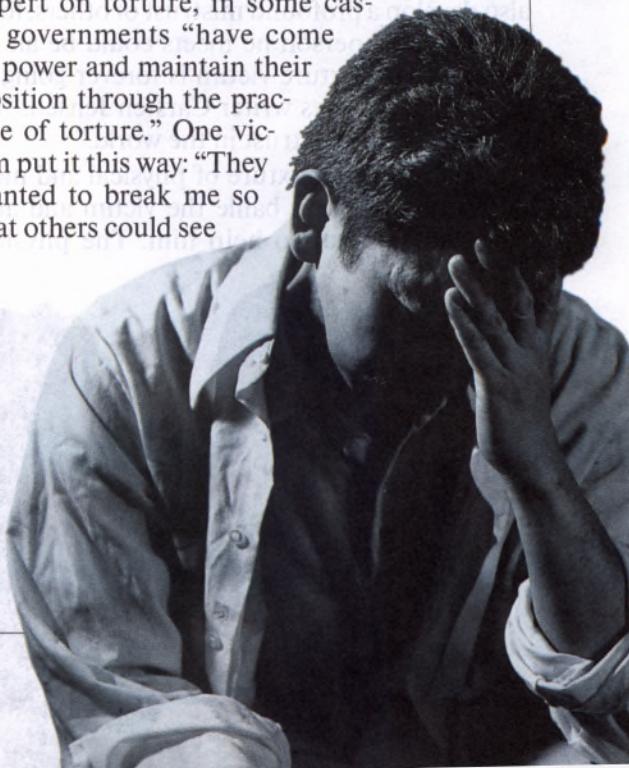
BY AWAKE!
CORRESPONDENT
IN DENMARK

A YOUNG man strolls down a peaceful street in a European city and pauses to look at some merchandise displayed in a shop window. Suddenly, his hands tremble. His knees shake. He clutches his neck as if he were going to choke. In the window, he has just seen the reflection of two uniformed policemen. The young man has broken no laws, and there is no reason for him to be afraid. Yet, the mere sight of men in uniform takes him back to a place thousands of miles away and to a time years ago when he was a victim of torture.

This could be the story of any one of millions of men, women, and even children. It could be the story of someone you know. The victim of cruel mistreatment may be a refugee or an immigrant who has moved into your neighborhood. His children may attend school with your children. You may know him as a quiet, calm, polite neighbor who generally keeps to himself. But outward appearances can be deceiving; they may conceal the inner turmoil that the victim feels as he grapples with memories of past physical and mental suffering. Any sight—or sound—may cause him to relive past horrors. One such victim explains: "Whenever I hear a baby cry, I think of people I heard crying in the prison. Whenever I hear a sweeping

sound in the air, I remember the rod going up and down—the sound it made just before it hit me."

Torture is not the sole domain of political extremists and terrorist groups. In a number of countries, it is also employed by military and police forces. Why? Torture can be a quick and efficient way to obtain information, to extract a confession, to obtain incriminating testimony, or to take revenge. According to Denmark's Dr. Inge Genefke, a leading expert on torture, in some cases governments "have come to power and maintain their position through the practice of torture." One victim put it this way: "They wanted to break me so that others could see



"NO ONE SHALL BE SUBJECTED TO TORTURE OR TO CRUEL, INHUMAN OR DEGRADING TREATMENT OR PUNISHMENT."—Article 5, *Universal Declaration of Human Rights*

what happens to you when you criticise the government.”

To many people the idea of inflicting torture on fellow humans is strictly reminiscent of the Dark Ages. After all, in 1948 the United Nations adopted the Universal Declaration of Human Rights, which states: “No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.” (Article 5) Some experts believe, however, that up to 35 percent of the world’s refugees have been tortured. Why is torture so widespread? How are victims affected, and what can be done to help them?

The Aftermath

Not surprisingly, many victims of torture flee their homeland to start a new life elsewhere. But while the locale may change, the suffering—both physical and psychological—continues. For example, the victim may experience feelings of guilt because of being unable to protect friends or relatives from mistreatment. He may also develop a profound mistrust of others, fearing that each person he meets could be an informer. “The torture victim is forever going to be a stranger,” says writer Carsten Jensen. “He has forever lost his trust in the world.”

The result is a mixture of physical and mental trauma that can baffle the victim and anyone who sets out to help him. The physical

problems can sometimes be treated readily, but not so the psychological. “In the beginning we thought, ‘All right, we’ll put their bones together—then they can walk home,’” admits Dr. Genefke. “But we soon learned that it was the pain in their hearts that was eating them up.” Nevertheless, Dr. Genefke notes: “It has been a surprise to learn that it *is* possible to relieve and to help victims, even if many years have passed.”

In 1982, at Copenhagen’s National Hospital, Dr. Genefke along with other Danish physicians set up a small unit for treating refugees who were victims of torture. From these small beginnings grew a global network under the name International Rehabilitation Council for Torture Victims (IRCT). From its headquarters in Copenhagen, the council is directing relief work through more than 100 centers worldwide. Over the years, the council has learned much about treating victims of torture.

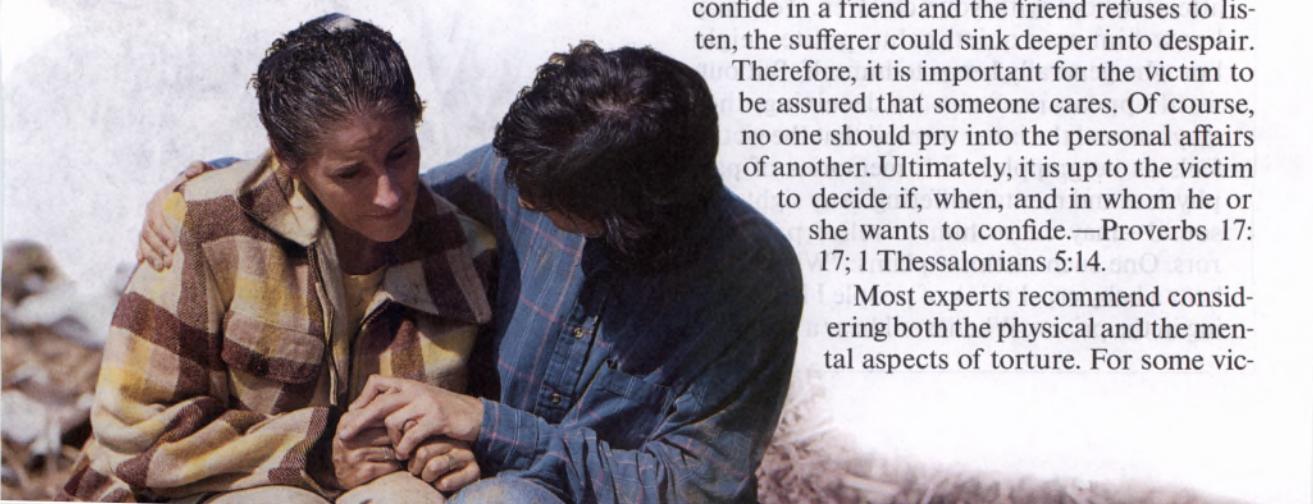
How to Give Support

It is often helpful for victims to talk about their experiences. “Some 20 years ago,” says a presentation sheet from the IRCT, “torture victims were often victims in a double sense. First by being exposed to the physical/psychological act of torture, and then second by not being able to talk about it.”

Granted, it is not pleasant to talk about a topic as dismal as torture. But if a sufferer wishes to confide in a friend and the friend refuses to listen, the sufferer could sink deeper into despair.

Therefore, it is important for the victim to be assured that someone cares. Of course, no one should pry into the personal affairs of another. Ultimately, it is up to the victim to decide if, when, and in whom he or she wants to confide.—Proverbs 17: 17; 1 Thessalonians 5:14.

Most experts recommend considering both the physical and the mental aspects of torture. For some vic-



HOW YOU CAN HELP

IF YOU ARE ACQUAINTED WITH SOMEONE WHO IS RECOVERING FROM THE EFFECTS OF TORTURE, THE FOLLOWING SUGGESTIONS MAY PROVE HELPFUL:

- Show empathy. You might say: "I know there is a lot of trouble in the country you come from. How are you coping?"—Matthew 7:12; Romans 15:1.
- Do not pry or be too insistent about providing help. Rather, be kind and considerate. Let the victim know that you are willing to listen.—James 1:19.
- Avoid being overly helpful. Do not deprive the sufferer of his self-respect or his privacy. The idea is to share the burden with the sufferer, not to attempt to carry it completely.

tims, rehabilitation requires professional help. Approaches to treatment include exercises in breathing and in communication.* Feelings of shame are usually among the first to be addressed. One therapist told a woman who had been repeatedly raped and beaten: "The shame you feel is normal and understandable. But remember that it is not *yours*. The shame belongs to the people who did this to you."

Concentration Camp Survivors

During World War II, millions of people suffered horrible indignities in Hitler's concentration camps. Among these were thousands of Jehovah's Witnesses who were persecuted because they refused to renounce their religious beliefs. Their faith undeniably helped them to endure such trialsome circumstances. How?

Long before their incarceration, these Christians had been careful students of God's Word. Thus, they were not puzzled when trials arose, nor did they blame God when their suffering did not immediately come to an end. Through a study of the Bible, the Witnesses had learned why God permits wickedness and how he will put an end to it in his due time. Bible study had taught them that Jehovah is "a lover of justice" and that he is outraged when men mistreat their fellow humans.—Psalm 37:28; Zechariah 2:8, 9.

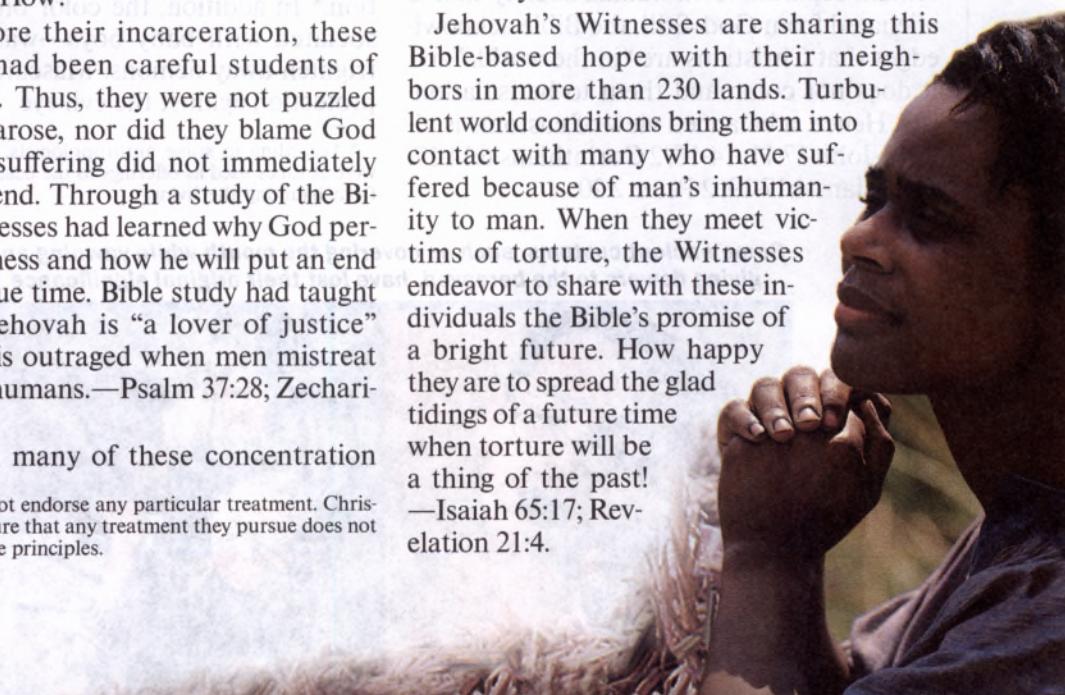
Of course, many of these concentration

* *Awake!* does not endorse any particular treatment. Christians should be sure that any treatment they pursue does not conflict with Bible principles.

camp survivors have had to cope with the traumatic aftereffects of their ordeal. In doing so, they have been greatly strengthened by following the counsel of the apostle Paul. While Paul languished in a Roman prison, a situation that must have brought him considerable anxiety, he wrote to fellow believers: "Do not be anxious over anything, but in everything by prayer and supplication along with thanksgiving let your petitions be made known to God; and the peace of God that excels all thought will guard your hearts and your mental powers by means of Christ Jesus."—Philippians 1:13; 4:6, 7.

Through Bible study, these integrity keepers have learned that God has promised to make the earth a paradise, where the painful effects of indignities such as torture will eventually be erased.

Jehovah's Witnesses are sharing this Bible-based hope with their neighbors in more than 230 lands. Turbulent world conditions bring them into contact with many who have suffered because of man's inhumanity to man. When they meet victims of torture, the Witnesses endeavor to share with these individuals the Bible's promise of a bright future. How happy they are to spread the glad tidings of a future time when torture will be a thing of the past!—Isaiah 65:17; Revelation 21:4.



A Balanced View of Popular Customs

"THERE IS NO POSSIBLE LINE OF CONDUCT WHICH HAS NOT AT SOME TIME AND PLACE BEEN CONDEMNED, AND WHICH AT SOME OTHER TIME AND PLACE BEEN ENJOINED AS A DUTY."

WITH this observation, the Irish historian William Lecky sums up the fickle nature of people. His comments might also apply to customs and traditions down through the ages. Indeed, many practices that were once viewed as an essential part of daily life have in later times been condemned. This is not surprising, for as the Christian apostle Paul noted, "the scene of this world is changing."—1 Corinthians 7:31.

Yes, human society is in a constant state of flux. This is often reflected in wide shifts in attitudes and social habits. Christians are to be "no part of the world"—that is, they remain separate from human society that is alienated from God. Still, the Bible acknowledges that Christians are "in the world," and it does not command them to be isolationists. Hence, a balanced view of customs is vital.—John 17:11, 14-16; 2 Corinthians 6:14-17; Ephesians 4:17-19; 2 Peter 2:20.

Some ancient customs, such as covering the mouth while yawning and giving flowers to the bereaved, have lost their original significance

What Are Customs?

Customs are practices that apply to social life and are common to a particular place or class of people. Some customs, such as table manners and etiquette, may have arisen out of a need to regulate people's behavior in group activities, enabling them to interact in a civil and mutually respectful manner. In such cases, social courtesies can be likened to oil, in that they lubricate the wheels of human relationships.

Customs have been profoundly influenced by religion. Many, in fact, arose from old superstitions and non-Biblical religious ideas. For instance, giving flowers to bereaved ones may have had its origin in religious superstition.* In addition, the color blue—often associated with baby boys—was thought to frighten away demons. Mascara served as a protection against the evil eye, while lipstick

* According to some anthropologists, flower bouquets were at times used as offerings to the dead to prevent them from haunting the living.



was used to discourage demons from entering a woman's mouth and possessing her. Even a custom as innocuous as covering the mouth while yawning may have arisen from the idea that one's soul could escape through a wide-open mouth. Over the years, however, the religious associations have faded, and today these practices and customs have no religious significance.

The Concern of Christians

When a Christian must decide whether or not to follow a certain custom, his main concern should be, What is God's viewpoint as expressed in the Bible? In the past God condemned certain practices that may have been tolerated in some communities. These included child sacrifice, the misuse of blood, and various sexual practices. (Leviticus 17:13, 14; 18:1-30; Deuteronomy 18:10) Likewise, certain customs that are common today are clearly not in harmony with Bible principles. Among these are non-Biblical traditions connected with religious holidays such as Christmas and Easter or with superstitious practices related to spiritism.

But what about customs that may once have been linked to questionable practices but that today are primarily viewed as social etiquette? For example, many popular wedding customs—including the exchanging of rings and the eating of cake—may have pagan origins. Does this mean that Christians are forbidden to observe such customs? Are Christians required to scrutinize meticulously each custom of the community to see whether somewhere or at some time it had negative connotations?

Paul points out that "where the spirit of Jehovah is, there is freedom." (2 Corinthians 3:17; James 1:25) God wants us to use this freedom, not as an inducement for selfish cravings, but to train our perceptive powers to distinguish right from wrong. (Galatians 5:13; Hebrews 5:14; 1 Peter 2:16) Hence, in a matter where there is no clear violation

of Bible principles, Jehovah's Witnesses do not create a hard-and-fast rule. Instead, each Christian must weigh the circumstances at hand and make a personal decision.

Seek Others' Advantage

Does this mean that it is always proper to participate in a certain custom as long as it does not directly violate Bible teachings? No. (Galatians 5:13) Paul indicated that a Christian should seek not only his own advantage "but that of the many." He should "do all things for God's glory" and not become a cause for stumbling. (1 Corinthians 10:31-33) So a person seeking God's approval would want to ask himself: 'How do others view this custom? Does the community attach any objectionable meaning to it? Would my participation imply that I am in agreement with practices or ideas that are displeasing to God?'—1 Corinthians 9:19, 23; 10:23, 24.

Though generally innocuous, some customs may be practiced locally in ways that are contrary to Bible principles. For instance, on specific occasions the giving of flowers may take on special meaning that conflicts with Bible teachings. So, what should a Christian primarily be concerned about? Although there may be reason to examine the origin of a particular custom, in some cases it is more important to consider *what the custom means to people at the time and in the place where one now lives*. If a custom has unscriptural or otherwise negative connotations during a particular period of the year or under certain circumstances, Christians may wisely decide to avoid it at that time.

Paul prayed that Christians continue letting their love abound with accurate knowledge and full discernment. By keeping a balanced view of popular customs, Christians "make sure of the more important things, so that [they] may be flawless and not be stumbling others." (Philippians 1:9, 10) At the same time, they will let their "reasonableness become known to all men."—Philippians 4:5.

WATCHING THE WORLD

Dangers of Obesity

Dramatic increases in diabetes, heart disease, and other diseases are forecast as a result of "the epidemic of obesity sweeping Europe," reports *The Independent* of London. Addressing a meeting of medical experts from 26 countries in Milan, Italy, the chairman of the International Obesity Task Force said: "This is a global crisis and urgent action is required now to prevent this silent epidemic of serious illness and spiralling health costs. We are facing a health disaster if we do not act." All European countries are involved, and in some areas between 40 and 50 percent of the population is affected. Since 1980, obesity rates in England have risen from 8 to 20 percent for women and from 6 to 17 percent for men. The reasons given include sedentary life-styles and a richer diet—both linked to growing prosperity. The greatest cause for concern is the number of overweight children. According to Professor Jaap Seidell, president of the European Association for the Study of Obesity, "there are signs that a larger proportion of the next generation are becoming obese and overweight at an earlier age."

The Downside of Globalization

Economic globalization is creating a world marketplace that provides greater opportunities for many, but it is also increasing risks, reports the British newspaper *The Guardian*. The interdependence of nations in the emerging world

economy makes it possible for an apparently isolated event—such as the devaluation of the Thai baht in 1997—to spark financial panic worldwide. "Thirty years ago," notes *The Guardian*, "the gap between the richest fifth of the world's people and the poorest stood at 30 to 1. By 1990 it had widened to 60 to 1 and today it stands at 74 to 1.... Among the biggest beneficiaries of globalisation are criminals, who can now exploit worldwide markets for drugs, arms and prostitutes."

Can You Avoid Colds?



You may not be able to avoid colds entirely, but there are precautions you can take, says *The New York Times*. The following are among the most important: To the extent possible, avoid crowds, and try not to shake hands with people who obviously have a cold. In addition, refrain from rubbing your eyes and nose, and wash your hands frequently. Such precautions help because the hands often carry cold viruses to delicate eye and nose membranes. Cold viruses on a surface or on the hands can remain active for several hours, and a person who has a cold can be contagious for some time before and after the signs of illness are obvious.

Other precautions include eating a balanced diet and being especially careful when around children. Why? Because they get between five and eight cold infections a year!

Mental Health in Africa

"An estimated 100 million people, out of sub-Saharan Africa's 600 million population, suffer from mental disorders," reports the South African newspaper *The Star*. According to the World Health Organization, war and poverty are primarily to blame for this high figure. A related factor is the declining support of the extended family. According to Professor Michael Olatawura, of Nigeria, this "traditional African safety net" is being eroded by Western values, drug abuse, and civil violence. In addition, family members are traveling farther afield in search of employment. "The economic problems of African governments have confounded our ability to support health as we should," says Professor Olatawura.

War Rugs

The horrors of war are being expressed in an unusual art form in Afghanistan, reports *The News of Mexico City*. For the past 20 years, Afghan artisans have woven depictions of war implements into their famous rugs. In among the traditional figures of birds, mosques, and flowers can be found figures of machine guns, hand grenades, and armored tanks. Rug expert Barry O'Con-

nell says that while the figures are not always immediately noticeable, many designs are "so accurate in their iconography" that it is often possible to "distinguish between AK-47 and AK-74 assault rifles." It is said that the majority of the rug weavers are women who are victims of war. For them, weaving these unique rugs is a subtle way of expressing their feelings.

Tainted Rain

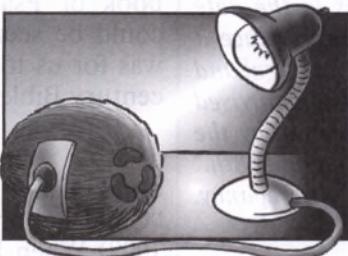
High levels of dissolved pesticides have made some rainwater in Europe unsuitable to drink, reports *New Scientist* magazine. Chemists in Switzerland have found that rain samples taken during the first minutes of a storm frequently contain higher levels of pesticides than those considered acceptable by either the European Union or Switzerland. Crop sprays are to blame, and the highest concentration of such toxic chemicals shows up in the first downpour after a long dry spell. Meanwhile, Swedish researchers have linked the rapidly rising incidence of non-Hodgkin's lymphoma, a form of cancer, to the widespread use of several crop sprays. Chemicals that prevent the growth of vegetation on roofing materials likewise pollute the rainwater that runs off buildings.

Farming Deaths

More than one person a week is killed on Britain's farms, making farming one of the most dangerous jobs in the country, reports *The Times* of London. In 1998 the youngest victim, only four years

old, was crushed under the wheels of a tractor, and seven other deaths were caused by tractors overturning on slopes. Farmers are being warned to think twice before undertaking risky tasks and to check conditions before driving a tractor up a grade. David Matthey, chief agricultural inspector for the Health and Safety Executive, said: "Most of these tragedies would have been avoided if the person had stopped for a few seconds, thought the job through and completed the task in a slightly different way."

Unusual Power Sources



■ The island of Ouvéa, in New Caledonia, has no petroleum, but it is using coconut oil to generate electricity, reports the French magazine *Sciences et avenir*. French engineer Alain Liennard spent 18 years developing an engine that runs on coconut oil. The engine drives a generator, which in turn powers the desalination plant that supplies the island's 235 families with drinking water. Liennard says that his 165-kilowatt system rivals diesel engines in power output and fuel consumption.

■ Meanwhile, in an experiment conducted in Kalali village in Gujarat State, India, the strength of bullocks has been harnessed to generate electrici-

ty. *Down to Earth* magazine, of New Delhi, reports that a scientist and his niece came up with an idea for generating power. Four bullocks turn a shaft connected to a gearbox that drives a small generator. The generator is connected to batteries, which power a water pump and a grain grinder. The unit cost of this power is about ten cents, compared with \$1 per unit using windmills or \$24 per unit using solar panels, says *Down to Earth*. However, since the villagers need the bullocks to work their fields for three months of the year, the developers are seeking an effective means of storing power for use during the bullocks' absence.

Sensible Eating

On the average, girls grow 10 inches and gain 40 to 50 pounds between the ages of 10 and 14, while boys grow about 12 inches and gain 50 to 60 pounds between 12 and 16. During this period of rapid growth, it is not uncommon for teens to feel very uncomfortable with their weight, and many become concerned about controlling their weight. "But dieting and restricting food intake are not healthy solutions and are not recommended," writes dietitian Lynn Roblin in *The Toronto Star*. These measures can deprive the body of nutrients, notes Roblin. Also, experimenting with diets "sets the stage for poor eating habits and could lead to more serious eating disorders." Teens, she notes, need to have a more realistic view of their body image and achieve a healthy weight through "sensible eating, active living and feeling good about themselves."

FROM OUR READERS

Vasco da Gama I enjoyed tremendously the article "The Remarkable Voyage of Vasco da Gama." (March 22, 1999) It was well illustrated and informative. You state that he had three little ships on his voyage, but there were actually four. Also, you say that Da Gama returned to Lisbon on September 8, 1499. However, he arrived toward the end of August.

P. N., Kenya

It is true that Da Gama's journey began with four ships. However, the part of the voyage described in the introduction took place after the fourth ship was destroyed. As to the date of his arrival in Lisbon, most sources place it in early September. Interestingly, "Portugal and the Discoveries" states: "Vasco da Gama arrived on or near August 29th, being received by the King with all due ceremony on September 8th." This may reconcile the seeming discrepancy.
—ED.

Crossword Puzzles I want to write you about the crossword puzzles in *Awake!* I enjoy them because they keep my brain occupied, and at age 78, one needs to keep the mind active. When we read the Bible, our minds do not usually store such detailed information as is presented in the puzzles. So I take the time to look up all the cited scriptures. Thank you for this feature.

J. W., United States

Comenius I am teaching a group of adults to read. Your excellent article "Comenius—The Grandfather of Modern Education" (May 8, 1999) helped me to understand why some have difficulty learning. The information in the accompanying box, "Some Teaching Principles of John Comenius," will be very useful.

N. A. F., Brazil

Thank you for the informative article. I learned more about Comenius from four pages of *Awake!* than I had from ten lectures during my course of study at the university.

H. P., Germany

Native American Bible When I read the article "Native Americans and the Bible" (May 8, 1999), my interest was especially stirred by your references to John Eliot's Bible for the Massachusetts Indians. My husband and I saw a copy of that Bible on a visit to the Huntington Library, in San Marino, California. It was opened to the book of Psalms, and the name Jehovah could be seen repeatedly. What a thrill it was for us to see God's name in this 17th-century Bible!

B. J., United States

Child Labor Thank you for the series "Child Labor—Its End in Sight!" (May 22, 1999) When I first saw the cover, my honest opinion was that the articles had nothing to do with my country. But once I started reading, I couldn't stop. To put it more plainly, I was horrified. I recently bought a hand-sewn teddy bear for a fraction of what it would have cost if it had been made in Japan. It is heartrending to think that behind its cheap price may be the heartless treatment of small children.

S. O., Japan

Weight I am ten years old. Thank you for the article "Young People Ask . . . How Can I Conquer My Obsession With Weight?" (May 22, 1999) I have always thought that I was too heavy. By reading this article, I came to understand that a person's figure is not the main thing. More important are a person's qualities.

M. S., Russia

LA BAMBOUSERAIE

A DREAM COME TRUE

BY AWAKE! CORRESPONDENT IN FRANCE

ALMOST 150 years ago in the south of France, Eugène Mazel, an importer of Asian spices, set out to make what would become the largest bamboo nursery in the world, containing nearly 200 varieties of this fast-growing, versatile grass. Until 1855, Mazel's ambition was blocked by a major obstacle: Bamboo did not grow in Europe.

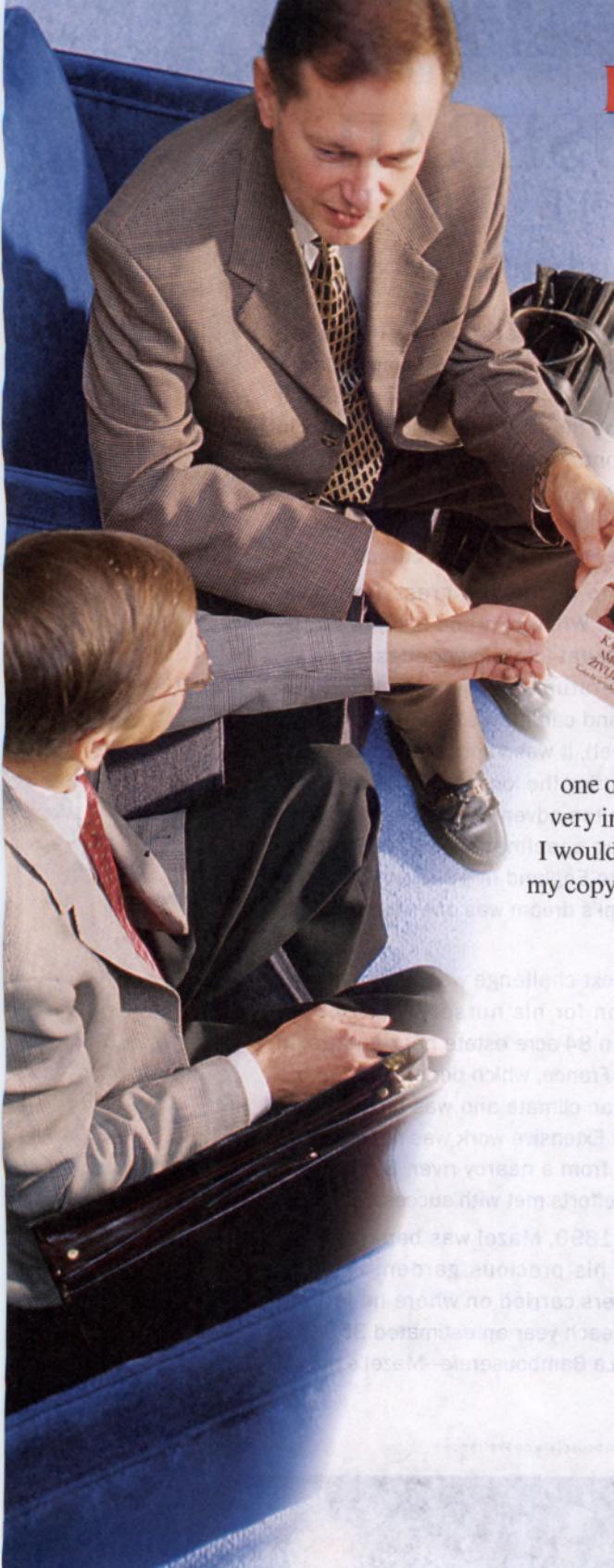
Attempts to import the grass from Asia proved futile. While bamboo is quite sturdy in its own habitat (certain varieties can withstand temperatures as low as -11 degrees Fahrenheit and can grow at an altitude of up to 16,000 feet), it was impossible to keep the roots alive during the long journey across continents. With the advent of faster ships, however, bamboo specimens were successfully imported to England in 1827 and, later, to France. Mazel's dream was one step closer to reality!

Mazel's next challenge was finding a suitable location for his nursery. In 1855 he purchased an 84-acre estate near Anduze, in the south of France, which benefited from the Mediterranean climate and was blessed with suitable soil. Extensive work was necessary to direct water from a nearby river. But Mazel's painstaking efforts met with success.

Sadly, by 1890, Mazel was bankrupt and had to sell his precious garden. Happily, though, others carried on where he left off, so that now each year an estimated 350,000 people visit La Bambouseraie—Mazel's dream come true.

All pictures: La Bambouseraie de Prafrance





He Cannot Keep His Copy

A businessman wrote to the Slovenia branch office of Jehovah's Witnesses:

"Thank you for regularly sending me the *Awake!* and *Watchtower* magazines. I take them with me when I travel, as I read them during the trip and while waiting for business meetings.

"I would also like to request that you send me the following publications that have been mentioned in your magazines: *Is There a Creator Who Cares About You?*, *What Is the Purpose of Life? How Can You Find It?*, and *A Book for All People*.

"I would like to have two copies of each publication. This is because every time I read one of your publications when I am traveling, someone is very interested in what I am reading. Despite the fact that I would like to keep it for my own library, I give the person my copy."