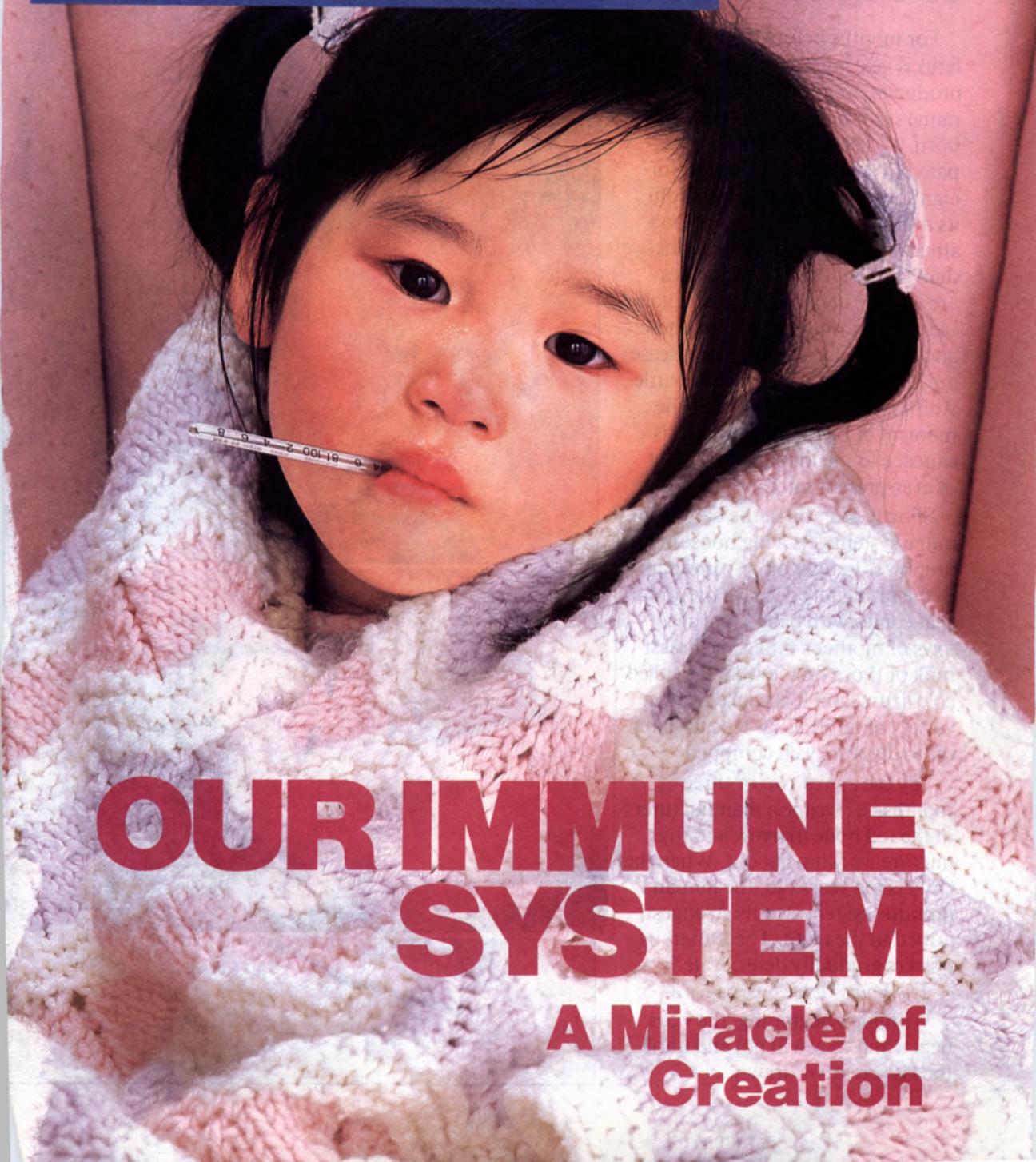


Awake!

November 22, 1990



OUR IMMUNE SYSTEM

**A Miracle of
Creation**

Even the Fetus Is Ready to Fight

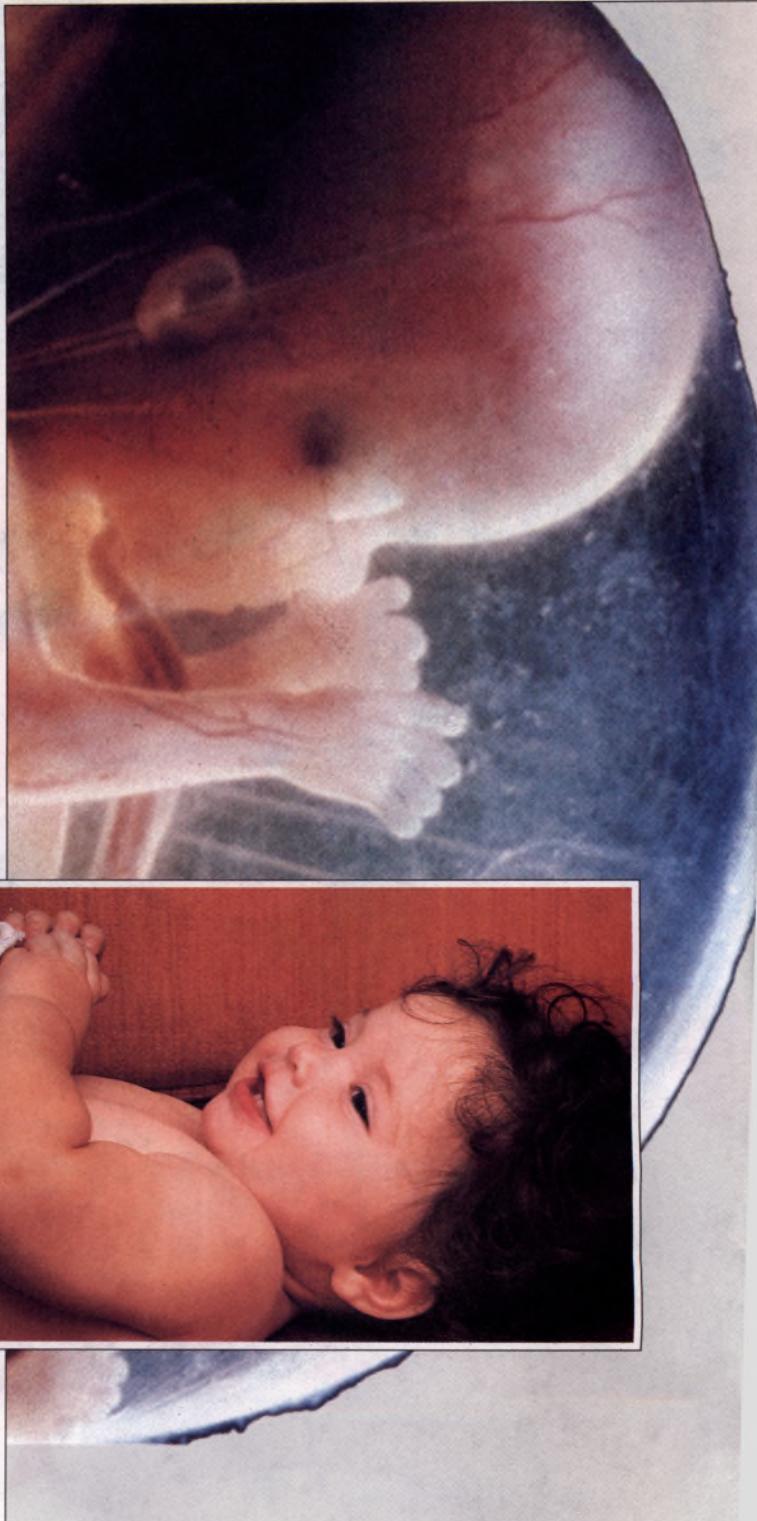
For months before birth, the fetus is gearing up for battle. It is producing weapons for the immune system. By the time baby is born, its defenses are being prepared to detect and neutralize foreign substances. Antibodies from its mother are in the baby's blood, already in higher concentrations than in its mother's. Phagocytes are waiting in baby's tissues to gobble up any foreign invaders. These and other defenders against disease are in the trenches, ready for battle. And well that they are, for at the moment of birth, the newborn is exposed to the massive onslaught of ever-present microorganisms.

Shortly after birth the baby's immune system gets a big boost in its firepower to fight off any invaders — the ultimately decisive firepower that comes with baby's first swallows of mother's milk. The breast milk of those first few days is called colostrum, and it is packed with a variety of antibodies. It sends baby off to the wars well equipped.

"By the age of two or three months, . . . weapon manufacturers in the red bone marrow and thymus are working flat out. When the child is ten years old, the human immune system is at its strongest, armed to the teeth. Thereafter, its powers gradually deteriorate."

—*The Body Victorious*, pages 34-5.

With life's beginning, the wars begin, and they will not end until the last breath is drawn.



OUR IMMUNE SYSTEM A Miracle of Creation

We cannot see them, but they are there. Their teeming millions are everywhere around us, clinging to us, bent on getting inside of us. They crave the moist, nutritional warmth within us, and once there, their numbers escalate alarmingly. If left uninhibited, they would soon take us over completely. Our only response to counter this destructive force is war, a war within us. It must be instant and total war between these disease-carrying alien invaders and our body's immune system with its two trillion defenders.* No quarter asked, none given. Our lives hang in the balance. It's them or us. Usually we win. But not always. The outcome depends on how quickly and completely our immune system gears up for the fight.

THE immune system is one of the most incredible and complex features of our amazingly and wonderfully made bodies. It is compared favorably with the most complex organ of them all, the human brain. Immunologist William Paul of the National Institutes of Health says: "The immune system has a phenomenal ability for dealing with information, for learning and memory, for creating and storing and using information." High praise, but not too high. Dr. Stephen Sherwin, director of clinical research at Genentech, Inc., adds his tribute: "It's an incredible system. It recognizes molecules that have never been in the body before. It can differentiate between what belongs there and what doesn't." And if it doesn't, it's war!

How does our immune system know what belongs there and what doesn't? A special protein molecule, called MHC (major histocompatibility complex), sits on the surface of nearly every cell of our body. It is an identity tag that tells the immune system that this cell is a friend, a part of us, unique to us. The immune system thereby recognizes our own cells and accepts them but attacks any cells displaying different molecules on their surfaces—and all cells not ours do display surface molecules different from ours.

So it is by means of these surface molecules that our immune system recognizes each cell as "us" or "them," as self or nonself. If nonself, it triggers a reaction by our immune system. "The concept that the immune system must discriminate continually between self and nonself," says the book *Immunology*, "is a cornerstone of all immunological theory." In the category of nonself are such disease-causing organisms as viruses, parasites, fungi, and bacteria.

The Skin—More Than a Passive Covering

The skin is the first line of defense against these foreign invaders. More than just a passive protective covering, it has cells that warn the immune system of invading microorganisms. Billions of friendly bacteria live on the skin—in some places nearly 20 million per square inch. Certain ones produce fatty acids that hinder growth of harmful kinds of bacteria and fungi. *Scientific American*, June 1985, calls the

* Estimates for white blood cells range from one to two trillion. Their numbers fluctuate greatly. "Billion" as used in this article is a thousand million. "Trillion" means a million million.

skin an "active element of the immune system," with specialized cells that "have interacting roles in the response to foreign invaders."

Joining the skin as a part of the body's protective covering are the membranes that line the internal surfaces of the body. These membranes secrete mucus that traps microbes. Saliva, nasal secretions, and tears contain microbe-killing substances. Hairlike cilia in the air passages leading to the lungs push mucus and debris into the throat, where they can be eliminated by sneezing and coughing. If any invaders reach the stomach, they are either killed by the acids there, broken down by digestive enzymes, or trapped in the mucus that lines the stomach and the intestines. Eventually, they are evacuated along with other body waste.

Phagocytes and Lymphocytes —The Big Guns!

But these are mere skirmishes compared to the battles that rage back and forth once alien organisms breach these outer defenses and enter the bloodstream and body tissues or fluids. They have invaded the territory of the big guns of the immune system—the white blood cells, two trillion strong. Born in the bone marrow—about a million every second—they emerge to mature and form three distinct divisions: phagocytes and two kinds of lymphocytes, namely, T cells (three major kinds—helper, suppressor, and killer cells) and B cells.

Awake![®]

November 22, 1990

Vol. 71, No. 22

Semimonthly Languages Available by Mail: Afrikaans, Arabic, Cebuano, Danish, Dutch, English, Finnish, French, German, Greek, Iloko, Italian, Japanese, Korean, Norwegian, Portuguese, Spanish, Swedish, Tagalog, Yoruba, Zulu

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Printed in U.S.A.

Awake! (ISSN 0005-237X) is published semimonthly by Watchtower Bible and Tract Society of New York, Inc., 25 Columbia Heights, Brooklyn, N.Y. 11201. Second-class postage paid at Brooklyn, N.Y., and at additional mailing offices. Postmaster: Send address changes to *Awake!*, c/o Watchtower, Wallkill, N.Y. 12589.

"Prefabricated Weapons Against Every Conceivable Invader"

The immune system maintains "an armory of prefabricated weapons against every conceivable invader." This profusion of weaponry "is known to be produced by a complex genetic process in which parts of genes are shuffled and recombined." Now the report of a recent major discovery sheds light on how this happens.

"The newly discovered gene is believed to play an important role in that genetic recombination process. The scientists have named the gene RAG-1 for recombination activating gene." That discovery was reported in the magazine *Cell*, December 22, 1989. But the scientists at the Whitehead Institute for Biomedical Research in Cambridge, Massachusetts, U.S.A., who discovered RAG-1, worried that "the recombination gene was too inefficient and slow to explain how the body produces such a steady and dazzling variety of immune proteins. To meet the possibility of any sort of invasion, the

Now, the immune system may have a trillions-strong army, but each soldier can fight only one class of invader. During a disease millions of germs can be generated, and every one of those germs will have the same kind of antigen. But different diseases, even different varieties of the same disease, have different antigens. Before the

Average Printing: 11,930,000

Subscription requests should be sent to Watch Tower at the appropriate address below.

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Australia, Box 280, Ingleburn, N.S.W. 2565

*Canada L7G 4Y4, Box 4100, Halton Hills
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Published in 62 Languages

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body must keep on tap many millions of antibodies and T-cell receptors, all shaped just differently enough that at least a few can recognize even an entirely new type of pathogen."—*The New York Times*, June 26, 1990.

So these same scientists began looking for another gene to overcome this difficulty. Six months later *Science* magazine of June 22, 1990, reported that they had found it. "The scientists say the new gene, RAG-2, works with the first gene to weave together antibodies and receptor proteins more speedily. When operating in tandem, the two genes can recombine pieces of the immune system from 1,000 to one million times more efficiently than either gene can independently." Working in tandem, RAG-1 and RAG-2 pour out the millions of antibodies and T-cell receptors needed.

This research is described as "a very elegant piece of science." It is a major discovery that may open the door to a better understanding of some genetic diseases in which the body's defense systems fail.—*The New York Times*, December 22, 1989.

T cells and the B cells can attack these invaders, they must have receptors that can bind to their particular antigens. Hence, among the T cells and the B cells, there must be many different receptors, receptors specific for the antigens of each and every different disease—but each individual T cell and B cell has receptors that are specific for only one disease antigen.

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 importantly, this magazine builds confidence in the Creator's promise of a peaceful and secure new world before the generation that saw the events of 1914 passes away.

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Daniel E. Koshland, Jr., editor of the magazine *Science*, says on this point: "The immune system is designed to recognize foreign invaders. To do so it generates on the order of 10^{11} (100,000,000,000) different kinds of immunological receptors so that no matter what the shape or form of the foreign invader there will be some complementary receptor to recognize it and effect its elimination." (*Science*, June 15, 1990, page 1273) Thus, there are groups of T cells and B cells that, among them, can match every disease antigen that enters our body—just as a key fits a lock.

To illustrate. Two locksmiths work completely independently of each other. One of them makes millions of locks of all kinds but no keys. The other makes millions of keys of all shapes but no locks. Now the billions of locks and keys are dumped into a giant container and shaken thoroughly, and every key finds a lock and fits itself into it. Impossible? A miracle? It would seem so.

Like locks with their keyholes, millions of germs with their antigens invade your body and circulate through your bloodstream and lymph system. Like millions of keys, your immune cells with their receptors also circulate there and fit onto the matching antigens of the germs. Impossible? A miracle? It would seem so. But the immune system accomplishes it nonetheless.

Each category of lymphocytes has its special role to play in the fight against infection. The

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helper T cells (one of the three major T cells) are crucial. They are the ones that orchestrate the various reactions of the immune system, directing the battle strategy. Triggered by the presence of enemy antigens, the helper T cells by chemical signals (proteins called lymphokines) rally the troops of the immune system and increase their ranks by the millions. Incidentally, it is the helper T cells that the AIDS virus singles out for attack. Once they are knocked out, the immune system is rendered virtually helpless, which leaves the AIDS victim vulnerable to all sorts of diseases.

At this time, however, consider the helper T cell's role with the phagocytes, which are scavengers. Their name means "eating cells." They are not choosy—they eat anything that looks suspicious, whether foreign microorganisms, dead cells, or other debris. They function both as an army defending against disease germs and as a janitorial service gobbling up rubbish. They even eat the contaminants from cigarette smoke that blacken the lungs. If the smoking continues over a long period of time, the smoke destroys the phagocytes faster than they can be produced. Some of the meals of these eating cells, however, are indigestible, even fatal—silica dust and asbestos fibers, for example.

Phagocytes are of two kinds, neutrophils and macrophages. The bone marrow pours out some one hundred billion neutrophils a day. They live only a few days, but during an infection, their numbers skyrocket, increasing five-fold. Each neutrophil may engulf and destroy up to 25 bacteria and then die, but replacements come in a steady stream. Macrophages, on the other hand, may destroy a hundred invaders before they expire. They are bigger, tougher, and live longer than the neutrophils. They respond in only one way both to invaders and to trash—they eat them. It would be a mistake, however, to think of macrophages only as garbage disposal units. They

"can manufacture as many as 50 different types of enzymes and antimicrobial agents" and function as communication links between "not only the cells of the immune system but also hormone-producing cells, nerve cells, even brain cells."

Help! An Enemy Is in Our Midst!

When the macrophage ingests an enemy microorganism, it does more than just eat it. Like virtually all body cells, on its surface it carries the MHC molecules that identify it as self. But when the macrophage eats a germ, the MHC molecule draws out and displays a fragment of this enemy antigen in one of the grooves on its surface. This strip of antigen then acts as a red flag to the immune system, sounding the alarm that a foreign organism is on the loose inside of us.

By sounding this alarm, the macrophage is calling for reinforcements, more macrophages, millions of them! And this is where the helper T cell comes in. Billions of them are milling around in the body, but the macrophage must recruit a specific kind. It needs one with the kind of receptor that will fit onto the particular antigen that the macrophage is displaying.

Once this kind of helper T cell arrives and connects to the enemy antigen, macrophage and helper T cell exchange chemical signals. These hormonelike chemicals, or lymphokines, are extraordinary proteins that come with a bewildering array of functions to regulate and boost the immune system's response to disease germs. The result is that both macrophage and helper T cell begin reproducing themselves prodigiously. This means more macrophages to eat more of the invading germs and more of the right kind of helper T cells to latch onto the antigens those macrophages will display. Thus the ranks of the immune forces explode, and hordes of these particular disease germs are vanquished.



T Cells and B Cells Go to College

THE T cells and the B cells can't just come out of the bone marrow and go off to war. Their weaponry is ultramodern. High-tech training is mandatory before they take to the field. The T cells will be involved in biological warfare. B cells will be specializing in guided missiles. They get their training for this in the technical colleges of the immune system.

Hence, half of the millions of lymphocytes produced every minute in the bone marrow go to the thymus gland—a small gland located behind the breastbone—for their training as T cells. Concerning this, the book *The Body Victorious* says: "The lymphocytes which attend the technical college of the thymus are the *helper, suppressor, and killer cells* called T-lymphocytes (or T-cells). They are among the most indispensable armed forces of the immune system."

Antibodies—10,000 per Cell per Second!

The other "half of the unschooled lymphocytes," *The Body Victorious* tells us, are B cells

that go to the lymph nodes and related tissues for their training to be able to manufacture and launch guided missiles, called antibodies. When the B cells "muster in these tissues, they are like blank pages: they know nothing, and must learn from scratch" to "acquire the capacity to react specifically against substances foreign to the body." In the lymph nodes, a mature B cell, activated by helper T cells and related antigen, "proliferates and differentiates to form plasma cells that secrete identical antibodies with a single specificity at a rate of about 10,000 molecules per cell per second." —*Immunology*.

To help us absorb the magnitude of what the immune system is accomplishing, an article in the *National Geographic*, June 1986, details the problem confronting the thymus gland: "Somehow, as the T cells mature in the thymus, one learns to recognize the antigens of, say, the hepatitis virus, another to identify a strain of flu antigens, a third to detect rhinovirus 14 [a cold virus], and so on." After commenting on the "staggering task the thymus confronts," the article says that in nature there are "antigens in hundreds of millions of different shapes. The thymus must turn out a group of T cells that recognizes each one. . . . The thymus pumps out T cells by the tens of millions. Even though only a few of them may recognize any one antigen, the collective scouting force is vast enough to identify the almost infinite variety of antigens nature produces."

While some of the helper T cells were stimulating the macrophages to multiply, others in the lymph nodes were coupling with the B cells located there, causing them to multiply. Many of them become plasma cells. Again, there must be the right receptors on the helper T cells to join up with the B cells and cause them to produce plasma cells. It is those plasma cells that start churning out thousands of antibodies a second.

Defenders in the Ranks

1.



1. Phagocytes Feeding cells, of two kinds: neutrophils and macrophages. Both are scavengers that consume inanimate trash, dead cells and other rubbish, and large numbers of invading microbes. Macrophages are bigger, tougher, stronger than the neutrophils, living longer and ingesting many more microorganisms. Much more than garbage disposal units, they manufacture different enzymes and antimicrobial agents, and they function as *communication links* between other cells of the immune system and even the brain.

2.



2. MHC (major histocompatibility complex) Molecules on the surfaces of cells that *identify* the cells as a part of the body. On macrophages, the MHC displays a bit of the antigens of victims the macrophage has ingested, which stimulates both helper T cell and macrophage to multiply prodigiously to increase their ranks to battle with infection.

3.



3. Helper T cells They are *chiefs of operations* of the immune system, identifying enemies and stimulating the production of other warriors of the immune system, rallying them to join battle with the invaders. They call up reinforcements in the ranks of macrophages, other T cells and B cells, and stimulate the production of plasma cells.

4. Lymphokines Hormonelike proteins, including interleukins and gamma interferon, by which immune cells *communicate* with one another. They activate many vital reactions of the immune system, thereby boosting its response to disease germs.

4.



5. Killer T cells These T cells destroy cells in which viruses and microbes have hidden. They fire lethal proteins into these cells, *punching holes* in their membranes and causing the cells to rupture. They also eliminate cells that have turned cancerous.

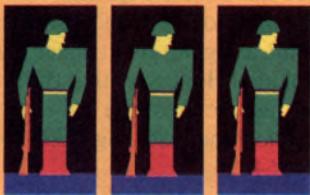
5.



of the Immune System

6. B cells Under the stimulus of helper T cells, B cells *increase in numbers*, and some divide and mature into plasma cells.

6.



7. Plasma cells These cells produce antibodies by the millions, which, like *guided missiles*, then circulate throughout the body.

7.



8. Antibodies When antibodies come across antigens their receptors can latch onto, they *grab them, slow them down, cause them to clump together* to become tempting morsels for the phagocytes to gobble up. Or they do the job themselves, with the help of the complement factors.

8.



9. Complement proteins Once the antibodies have locked onto the surface of the microorganism, proteins called complement flock onto it and *inject liquid* into it, causing it to burst and die.

9.



10. Suppressor T cell

When the infection is contained and the immune system has won, the suppressor T cells go into action and use chemical signals to halt the entire range of immune responses. The battle is won.

10.



11. Memory cells By

this time the T cells and the B cells have produced and left behind *memory* cells that circulate in the bloodstream and lymphatic system for years, even a lifetime. If another invasion is mounted by the same kind of organism that was previously defeated, an overwhelming attack is mounted by these memory cells, and this new invasion is quickly crushed. The body is now immune to that particular microorganism. This is the mechanism that makes vaccinations effective in eliminating diseases that were once scourges—measles, smallpox, typhoid, diphtheria, and others.

11.



An Explosive Increase in Knowledge, but the Mystery Remains

Since the AIDS virus struck and zeroed in on the immune system for a knockout, research has shot into high gear. Knowledge has increased tremendously. Nevertheless, the immune system is so amazingly complex that much about it remains a mystery, as the following quotes from immunologists show.

Immunologist John Kappler says: "The field is progressing so rapidly that the journals are out of date by the time they are published."

—*Time*, May 23, 1988, page 56.

Since each plasma cell makes only one kind of antibody, with a receptor specific for only one disease antigen, soon billions are on the front lines homing in on the antigens of one specific disease. They latch onto the invaders, slowing them down, causing them to clump together, making them more tempting morsels for the phagocytes to gobble up. This, together with the release of certain chemicals by the T cells, whips up the macrophages into a feeding frenzy, causing them to gobble up millions of the invading microorganisms.

Moreover, the antibodies themselves can lead to the death of these microorganisms. Once they have locked onto its surface antigens, special protein molecules, called complement factors, flock onto the germ. When the required number of complement factors are in place, they penetrate the membrane of the microorganism, liquid flows in, and the cell bursts and dies.

These antibodies, of course, must also have the right receptors to latch onto the intruders. On this point the 1989 *Medical and Health Annual* of the *Encyclopædia Britannica*, page 278, says that B cells are able "to produce between 100 million and a billion different antibodies."

Immunologist Leroy Hood, of the California Institute of Technology, says: "We've gained a good understanding of the hardware of the immune system, but we know almost nothing yet about the software that runs the system—the genes that tell our cells what to do." Concerning the hormonelike chemical signals that trigger reactions, the lymphokines, Hood says that the ones discovered so far are "just the tip of the iceberg." —*National Geographic*, June 1986, page 732; *Time*, May 23, 1988, page 64.

Researcher Edward Bradley: "We probably know as little about the immune system now as Columbus knew about the Americas after his first voyage."

—*National Geographic*, June 1986, page 732.

Killer T Cells Wage Biological Warfare

By now the helper T cells have recruited millions of the scavenger macrophages to gobble up the enemy and have stimulated B cells with their antibodies to join the fray against the invaders, but there are still other forces that the helper T cells call to battle. They marshal millions of the deadliest fighters to join the struggle—the killer T cells.

The goal of viruses, bacteria, and parasites is to get inside the body cells because once there, they are safe from the macrophages and the B cells and their antibodies—but not from the killer T cells! One of these infected cells needs only to brush against a killer T cell to cause it to shoot the infected cell full of holes with lethal proteins, destroy its DNA, and spill its contents out in death. In this way killer T cells can attack and destroy even mutant cells and cells that have turned cancerous.

In addition to killer T cells, there are other killer cells in the immune system's weaponry, namely, natural killer cells. Unlike T and B cells, these natural killer cells do not need to be triggered by a specific antigen. Cancer cells and cells invaded by other viruses are vulnerable to their onslaughts. But their reach may not be limited to viruses. *Scientific American*,

January 1988, says that their "main targets are thought to be tumor cells, and perhaps also cells infected by agents other than viruses."

How do these disease fighters meet up with the invading microorganisms? Is it just hit-or-miss? No. Nothing is left to chance. Disease antigens and T cells, B cells, phagocytes, and antibodies circulate throughout the body by means of the bloodstream and the lymphatic system. The secondary lymphoid organs, such as lymph nodes, spleen, tonsils, adenoids, patches of specialized tissue on the small intestine, and appendix, are sites where immune responses are initiated. The lymph nodes play a major role. Lymph is the fluid that bathes the cells in our tissues. It originates in those tissues, collects in thin-walled vessels and flows to the lymph nodes, continues throughout the rest of the lymphatic system, and finally completes its circulation by emptying into the large veins that lead into the heart.

As the disease antigens pass through the lymph nodes, they are filtered out and trapped. The disease fighters of the immune system take 24 hours to complete the entire lymphatic circuit, but 6 hours of that time is spent in the lymph nodes. There they meet the trapped invading antigens, and major battles begin. Likewise, enemy antigens traveling in the bloodstream do not escape. They are channeled to the spleen, where disease fighters are waiting to confront them.

Now the war within us is over. The invasion forces are defeated. The immune system with its trillion or more white blood cells has won. It's time for another category of T cells to take over, namely, the suppressor T cells. When they see that the war has been won, they call

Marijuana smoking "plays a crucial role in weakening the immune system by limiting the development of certain white blood cells."

—*Industrial Chemist*, November 1987,
page 14.

When the War Becomes a Civil War

"The ability to discriminate between self and nonself is a hallmark of the immune system." (*Immunology*, page 368) But when the system goes awry—as it sometimes does—it fails to discriminate between self and nonself and ends up in civil war, fighting itself. The maladies that then afflict us are called autoimmune diseases. Thought to be among them are rheumatic fever, rheumatoid arthritis, multiple sclerosis, Type 1 diabetes, myasthenia gravis, and systemic lupus erythematosus.

Additionally, the immune system sometimes errs when it views harmless intruders as dangerous enemies. It may be a grain of pollen, a particle of dust, animal dander, or a bit of crab that causes an allergic reaction. Excessive quantities of potent chemicals, such as histamines, are produced to fight off items that are harmless in themselves. The symptoms of these allergic reactions can be very distressing—wheezing, sneezing, sniffles, runny nose, watery eyes. If extreme, these reactions can lead to a shocklike state called anaphylaxis and can even cause death.

off the battle and close down the fighting forces of the immune system.

Memory Cells and Immunity, With Complications

By this time, however, the B cells and the T cells have performed another vital service: They have produced memory cells that circulate in the bloodstream and the lymph vessels for many years—in some cases for a lifetime. Should you ever be infected with the same strain of flu virus or cold virus, or with any other foreign substance encountered in the past, these memory cells will spot it immediately and rally the immune system for a quick and overwhelming assault. The memory cells will swiftly produce a flood of the specific type of B cells and T cells that fought off the first attack of this particular assailant. This new

invasion is stamped out before it gains a foothold. What originally might have taken three weeks to defeat is now whipped before it gets started. Your previous infection by that particular invader has left you immune to it.

The picture is complicated, however, by the existence of different strains of flu viruses, often originating in different parts of the world. In addition, there are some 200 strains of cold virus, and each strain has its own particular antigen. So there must be 200 different types of helper T cells, each type having a receptor that matches the antigen of one of the 200 cold viruses. But that's not all. The cold and flu viruses are constantly mutating, and each time that happens, there is a new cold or flu antigen that requires a new helper T-cell receptor to fit it. The cold virus keeps changing the locks, so the T cell must keep changing the keys.

Before you poke fun at doctors who can't cure the common cold, understand the problem. The particular cold you have may be cured and never attack you again, but a newly mutated cold virus comes along, and your immune system must come up with an entirely new helper T cell to rally the immune forces to fight it. Win one battle, soon another begins. The war is endless.

Brain and Immune System Communicate

No wonder the immune system has been compared favorably with the brain. Research continues to show that it and the brain talk to each other about our health and that the mind

The evidence mounts that blood transfusions are harmful to the immune system. Hundreds of scientific papers over the past several years have linked blood transfusions to immune suppression. "One unit of whole blood was sufficient to see immunosuppression," one report said.—*Medical World News*, December 11, 1989, page 28.

exercises influence over the body, including the immune system. The following quotes indicate a relationship between brain and immune system. It's a case of mind over body and body over mind.

"Immunologists are discovering more about the links between mind and body, the mechanisms of psychosomatic disease."—*National Geographic*, June 1986, page 733.

Recognized but little understood is the connection between the immune system and the brain. Mental stress, bereavement, loneliness, and depression affect the workings of the white blood cells, or lymphocytes, and this reduces T-cell activity. "The biological basis of these interconnections remains much of a mystery. It is clear, however, that the nervous and immune systems are inextricably linked, anatomically and chemically."—*The Incredible Machine*, pages 217, 219.

"The immune system . . . rivals the central nervous system in sensitivity, specificity, and complexity."—*Immunology*, page 283.

Science magazine reported on the link between the brain and the immune system: "A great deal of evidence shows that the two systems are inextricably interconnected. . . . The emerging picture shows that the immune and nervous systems are highly integrated, able to talk back and forth to coordinate their activities."—March 8, 1985, pages 1190-1192.

All of this reflects the infinite wisdom of the Creator of both the immune system and the brain. And this, in turn, makes us question whether our Creator, after building into us such amazing wonders as the brain and the immune system, would then program us to die. Actually, he did not do so; it is the scientist that says we are made thus. We are told that cells divide—more than 200 million are created in our bodies every minute—to replace injured and worn-out cells. But our cells, the scientists say, will divide no more than 50 times. Soon we are losing more than

we are replacing, old age sets in, and death follows.

But this is not the way man was created; man brought this on himself. He was created to live, be fruitful, become many, fill the earth, and take care of the earth—as long as he was obedient to his Creator. But he was warned: Disobey, and “dying you will die.” The first man disobeyed, had guilt feelings, and hid himself. From that moment on, humanity has been in the process of dying.—*Genesis 1:26-28; 2:15-17, Reference Bible*, footnote; 3:8-10.

In time, strong negative feelings become a “rotteness to the bones,” and “a spirit that is stricken makes the bones dry.” The result is an immune system of diminished capacity, since healthy, moist bone marrow is needed to produce an abundance of the disease-fighting white blood cells.—*Proverbs 14:30; 17:22*.

But the process of dying will be replaced by one of living, and a perfectly functioning im-

mune system will be an important factor in contributing to that. Jehovah’s purpose to have a paradise earth filled with righteous, obedient humanity will be accomplished through the ransom sacrifice of Christ Jesus. Then no one will be sick, death will be destroyed, and all flesh will “become fresher than in youth.” (Job 33:25; Isaiah 33:24; Matthew 20:28; John 17:3; Revelation 21:4) Then the amazing immune system designed by Jehovah will never lose a battle with any invading agents.

Even now, our immune system, with its shortcomings, is a miracle of creation. The more we learn about it, the more we stand in awe of its Grand Creator, Jehovah God. We join the psalmist David in his inspired expression: “I shall laud you because in a fear-inspiring way I am wonderfully made. Your works are wonderful, as my soul is very well aware.”—*Psalm 139:14*.

A Spiritual Immunity to the Moral Breakdown

OUR physical organism is besieged by millions of microbes clamoring to get inside of us and conquer us. Fortunately, we have waiting within us millions of defenders poised to pounce on them and defeat them first. Their response to the invaders is automatic; we need give them no thought. There is, however, another kind of invasion that we must give much thought to if we are to survive. It too is life-threatening, and there are forces behind it that are even more invisible than disease-causing microorganisms!

These forces attack the mind and the heart, the thinking and the feelings. Their visible manifestations cater to the flesh and starve the needs and joys of the spirit. In subtle and in flagrant ways, the masses of humanity are hustled along in the ever-expanding moral

breakdown that plagues this generation. As there is a physical immune system to ward off the invasion of our bodies by microbes and viruses, is there a means of immunity to rescue our spirituality from its destroyers? Yes, there is!

What can provide the spiritual antibodies powerful enough to provide spiritual immunity to the moral breakdown? Obviously, neither the rash of pop psychology best-sellers nor the weightier tomes of psychiatrists can do it.

One syndicated columnist reaches to a higher source for help: "It is impossible to have a moral community or nation without faith in God, because everything rapidly comes down to 'me,' and 'me' alone is meaningless." When the Russian dissident Aleksandr Solzhenitsyn was asked to identify the problem of the 20th century, he said: "Men have forgotten God. . . . The entire twentieth century is being sucked into the vortex of atheism and self-destruction."

One of the pioneers of modern psychiatry, Dr. C. G. Jung, expressed the essential ingredient for successfully resisting moral decay: "The individual who is not anchored in God can offer no resistance on his own resources to the physical and moral blandishments of the world. For this he needs the evidence of inner, transcendent experience which alone can protect him from the otherwise inevitable submersion in the mass. Merely intellectual or even moral insight . . . lacks the driving force of religious conviction, since it is merely rational."—*The Undiscovered Self*, page 34.

Only the Bible, when it is applied in our daily conduct, provides the spiritual antibodies powerful enough to protect mind and heart from the diseased antigens surrounding us and spewed out by the froglike croakings of "unclean inspired expressions" that would lead us into conflict with God.—Revelation 16:13, 14; 1 John 4:1.

Spiritual Antibodies to Protect Spirituality

■ God's Word has the power to change lives:

"Neither fornicators, nor idolaters, nor adulterers, nor men kept for unnatural purposes, nor men who lie with men, nor thieves, nor greedy persons, nor drunkards, nor revilers, nor extortioners will inherit God's kingdom. And yet that is what some of you were. But you have been washed clean, but you have been sanctified, but you have been declared righteous in the name of our Lord Jesus Christ and with the spirit of our God."—1 Corinthians 6: 9-11.

"The time that has passed by is sufficient for you to have worked out the will of the nations when you proceeded in deeds of loose conduct, lusts, excesses with wine, revelries, drinking matches, and illegal idolatries. Because you do not continue running with them in this course to the same low sink of debauchery, they are puzzled and go on speaking abusively of you."—1 Peter 4:3, 4.

"Strip off the old personality with its practices, and clothe yourselves with the new personality, which through accurate knowledge is being made new according to the image of the One who created it."—Colossians 3:9, 10.

■ When applied, the Scriptures protect against materialism:

"Keep your eyes open and guard against every sort of covetousness, because even when a person has an abundance his life does not result from the things he possesses."—Luke 12:15.

"Those who are determined to be rich fall into temptation and a snare . . . For the love of money is a root of all sorts of injurious things."—1 Timothy 6:9, 10.

"Just as one has come forth from his mother's belly, naked will one go away again, just as one came; and nothing at all can one carry away for his hard work."—Ecclesiastes 5:15.

■ *Care for the earth, do not pollute it, physically or spiritually:*

"Jehovah God proceeded to take the man and settle him in the garden of Eden to cultivate it and to take care of it."—Genesis 2:15.

God "formed it even to be inhabited."—Isaiah 45:18.

"The earth he has given to the sons of men."—Psalm 115:16.

"The very land has been polluted under its inhabitants . . . and those inhabiting it are held guilty."—Isaiah 24:5, 6.

God will "bring to ruin those ruining the earth."—Revelation 11:18.

■ *Shun me-ism, the worship of self:*

"Deaden, therefore, your body members that are upon the earth as respects fornication, uncleanness, sexual appetite, hurtful desire, and covetousness, which is idolatry."—Colossians 3:5.

■ *Avoid unclean associations:*

"Do not be misled. Bad associations spoil useful habits."—1 Corinthians 15:33.

"He that is walking with wise persons will become wise, but he that is having dealings with the stupid ones will fare badly."—Proverbs 13:20.

■ *Be on guard against Satan and his world:*

"The god of this system of things has blinded the minds of the unbelievers."—2 Corinthians 4:4.

"We know we originate with God, but the whole world is lying in the power of the wicked one."—1 John 5:19.

"If anyone loves the world, the love of the Father is not in him; because everything in the world—the desire of the flesh and the desire of the eyes and the showy display of one's means of life—does not originate with the Father, but originates with the world. Furthermore, the world is passing away and so is its desire, but he that does the will of God remains forever."—1 John 2:15-17.

■ *Arm yourself against invisible demonic forces:*

"Put on the complete suit of armor from God that you may be able to stand firm against the machinations of the Devil; because we have a wrestling, not against blood and flesh, but against . . . the wicked spirit forces in the heavenly places."—Ephesians 6:11, 12.

"Oppose the Devil, and he will flee from you. Draw close to God, and he will draw close to you."—James 4:7, 8.

■ *Follow safe guidelines and the perfect role model:*

"Your word is a lamp to my foot, and a light to my roadway."—Psalm 119:105.

"All Scripture is inspired of God and beneficial for teaching, for reproofing, for setting things straight, for disciplining in righteousness, that the man of God may be fully competent, completely equipped for every good work."—2 Timothy 3:16, 17.

"Christ suffered for you, leaving you a model for you to follow his steps closely."—1 Peter 2:21.

■ *The thinking that makes over the mind:*

"Quit being fashioned after this system of things, but be transformed by making your mind over, that you may prove to yourselves the good and acceptable and perfect will of God."—Romans 12:2.

"Whatever things are true, whatever things are of serious concern, whatever things are righteous, whatever things are chaste, whatever things are lovable, whatever things are well spoken of, whatever virtue there is and whatever praiseworthy thing there is; continue considering these things."—Philippians 4:8.

■ *The child training that heads off delinquency:*

"From infancy you have known the holy writings, which are able to make you wise for salvation through the faith in connection with Christ Jesus."—2 Timothy 3:15.

"Train up a boy according to the way for him; even when he grows old he will not turn aside from it."—Proverbs 22:6.

"The one holding back his rod is hating his son, but the one loving him is he that does look for him with discipline."—Proverbs 13:24.

"For what son is he that a father does not discipline? True, no discipline seems for the present to be joyous, but grievous; yet afterward to those who have been trained by it it yields peaceable fruit, namely, righteousness."—Hebrews 12:7, 11.

"These words that I am commanding you today must prove to be on your heart; and you must inculcate them in your son and speak of them when you sit in your house and when you walk on the road and when you lie down and when you get up."—Deuteronomy 6:6, 7.

"Children, be obedient to your parents in union with the Lord, for this is righteous. And you, fathers, do not be irritating your children, but go on bringing them up in the discipline and mental-regulating of Jehovah."—Ephesians 6:1, 4.

■ *Avoid divorces that lead to single-parent families, delinquency, drugs, sexual immorality:*

"With the wife of your youth may no one deal treacherously. For he has hated a divorcing,' Jehovah the God of Israel has said."—Malachi 2:15, 16.

"I say to you that whoever divorces his wife, except on the ground of fornication, and marries another commits adultery."—Matthew 19:9.

■ *The love that will eliminate all violence, crime, racism, drugs, drunkenness, hatred, abuse of others:*

"You must love Jehovah your God with your whole heart and with your whole soul and with your whole mind and with your whole strength." And, "You must love your neighbor as yourself."—Mark 12:30, 31.

"All things, therefore, that you want men to do to you, you also must likewise do to them; this, in fact, is what the Law and the Prophets mean."—Matthew 7:12.

"This is what the love of God means, that we observe his commandments."—1 John 5:3.

*This Old World on Its Way Out,
This New One on Its Way In*

Many modern psychologists and psychiatrists discount the practicality of these Scriptural restrictions on conduct. Some accept sexual immorality and homosexuality as just different life-styles. The distinctions between right and wrong become very fuzzy as a "new morality" is embraced. It is a modern-day example of Isaiah 5:20: "Woe to those who are saying that good is bad and bad is good, those who are putting darkness for light and light for darkness, those who are putting bitter for sweet and sweet for bitter!" As the Bible says of such ones: "All of you are physicians of no value." (Job 13:4) They give the green light to spiritual disease antigens; they write no prescriptions for spiritual antibodies to fight them.

Conditions prove that this old world is in its "last days," to be replaced by a new world of righteousness. "The heavens and the earth that are now are stored up for fire and are being reserved to the day of judgment and of destruction of the ungodly men. But there are new heavens and a new earth that we are awaiting according to his promise, and in these righteousness is to dwell."—2 Timothy 3:1-5; 2 Peter 3:7, 13.

The new world will see the end of sorrow, sickness, and death and open the way to everlasting life on a paradise earth: "No resident will say: 'I am sick.'" (Isaiah 33:24) God "will wipe out every tear from their eyes, and death will be no more, neither will mourning nor outcry nor pain be anymore." (Revelation 21:3, 4) And the prescription for gaining that world is given at John 17:3: "This means everlasting life, their taking in knowledge of you, the only true God, and of the one whom you sent forth, Jesus Christ."

HUMAN RULE

Weighed in the Balances



PART 8

A Political Mixture of Iron and Moist Clay

Nationalism: a sense of national consciousness exalting one nation above all others and putting the promotion of its culture and interests before those of others; a concept that first became apparent at the end of the 18th century but that has reached its peak in the 20th century.

STAGGERING helplessly from crisis to crisis, human governments are failing to bring stability to human society. According to Zbigniew Brzezinski, national security adviser to former U.S. president Jimmy Carter, the situation will not soon change.

Brzezinski, along with other world leaders, was interviewed by journalist Georgie Anne Geyer while she was preparing an article published in 1985 entitled "Our Disintegrating World." In it she quoted Brzezinski as having said: "The factors that make for international instability are gaining the historical upper hand over the forces that work for more organized cooperation. The unavoidable conclusion of any detached analysis of global trends is that social turmoil, political unrest, economic crisis, and international friction are likely to become more widespread during the remainder of this century."

A bleak prediction indeed but not one that surprises Bible students. This very situation was long ago foretold. When? Where?

Upset by a Dream

Nebuchadnezzar, king of Babylon from 624 to 582 B.C.E., was disturbed by a dream. In it he had seen an immense image with a head of gold, breasts and arms of silver, belly and thighs of copper, legs of iron, and feet and toes of iron mixed with clay. God's prophet Daniel



explained to Nebuchadnezzar the significance of the image, telling him: "You, O king, . . . you yourself are the head of gold. And after you there will rise another kingdom inferior

"Every kingdom divided against itself comes to desolation."—Matthew 12:25

to you; and another kingdom, a third one, of copper, that will rule over the whole earth." So, obviously, the image had to do with human government.—Daniel 2:37-39.

Before Daniel's time, both Egypt and Assyria had oppressed the Israelites, the chosen people of the Bible's Author. (Exodus 19:5) In the context of the Bible, this made them world powers, in fact, the first of a series of seven of which the Bible speaks. (Revelation 17:10) Then, in Daniel's day, Babylon overthrew Jerusalem, forcing the Israelites into exile. Thus Babylon became the third of these world powers, aptly referred to in this case as "the head of gold." The Bible and secular history identify the world powers that were yet to come as being Medo-Persia, Greece, Rome, and, finally, Anglo-America.*

These nations are classed by the Bible as world powers because they had dealings with God's people and opposed the divine rule these servants of God advocated. Thus, the image seen by Nebuchadnezzar well pictured how human rule would continue to be exercised in opposition to divine sovereignty even after his kingdom ended. The succession of world powers pictured by the various parts of the image started with the head and worked down. Logically, then, the feet and toes would symbolize the final manifestations of human

* The Watchtower dealt at some length with each of these world powers of Bible history individually in its issues of February 1 through June 1, 1988.

rule that would exist during "the time of the end," as Daniel expressed it. What, then, should we expect?—Daniel 2:41, 42; 12:4.

'Ten Toes'

No longer are God's servants limited to one nation or one locality, so that they can be oppressed by a single world power. (Acts 1:8; 10:34, 35) As members of all nations, citizens of every type of human government, they zealously announce that the time of the end has begun and that human rule has had its day—soon to be replaced by divine rule.* Thus, the bold message they proclaim confronts *all* existing political powers. Appropriately, the number "ten" as used in the Bible signifies completeness as to earthly things. So political human rule in its entirety, unitedly opposed to divine sovereignty during the time of the end, is what the 'ten toes' of the image would logically represent.

What was the political situation at the beginning of this foretold period of time? In the year 1800, European nations controlled 35 percent of the earth's surface, but by 1914 the figure had risen to over 84 percent! *The Collins Atlas of World History* notes that "on the eve of the 1914 war, it seemed that the division of the world among a number of great powers was almost complete." In fact, Hugh Brogan, lecturer in history at the University of Essex, England, says it appeared that "be-

"The nations became boisterous, the kingdoms tottered."—Psalm 46:6

fore long the whole world would be ruled by half a dozen powers."

Using 'ten toes' to symbolize the totality of

* For Biblical proof, see chapters 16 and 18 of the book *You Can Live Forever in Paradise on Earth*, published in 1982 by the Watchtower Bible and Tract Society of New York, Inc.

world governments that would not literally amount to more than just "half a dozen powers," however, would hardly seem reasonable. So if, in fulfillment of the prophecy, the 'ten toes' were to take on real significance, the political situation existing in 1914 would have to change.

As the 1900's dawned, the British Empire, the largest the world had ever seen, ruled over every fourth person on earth. Other European empires controlled millions of people more. But World War I resulted in a triumph for nationalism. Paul Kennedy, professor of history at Yale University, explains: "The most striking change in Europe, measured in territorial-juridical terms, was the emergence of a cluster of nation-states—Poland, Czechoslovakia, Austria, Hungary, Yugoslavia, Finland, Estonia, Latvia, and Lithuania—in place of lands which were formerly part of the Habsburg, Romanov, and Hohenzollern empires."

After World War II, this trend accelerated. Nationalism exploded with full force. Particularly after the mid-1950's, the trend was irreversible. Five centuries of European expansion was ending in the rubble of collapsed colonial empires. The number of nations in Africa, Asia, and the Middle East grew dramatically.

The New Encyclopædia Britannica says that this "development ran counter to the conceptions that had dominated political thought for the preceding 2,000 years." Whereas "hitherto man had commonly stressed the general and the universal and had regarded unity as the desirable goal," nationalism now stressed national differences. Instead of uniting, it tended to disunite.

Iron and Moist Clay

Note that the Bible describes the feet and toes of the image as being "partly of iron and partly of molded clay," adding: "The kingdom

itself will prove to be divided, . . . will partly prove to be strong and will partly prove to be fragile . . . , but they will not prove to be sticking together." (Daniel 2:33, 41-43) This lack of sticking together in unity became apparent as decolonization proceeded, as nationalism flourished, and as the developing countries gained in stature. The globe was rapidly slipping into political fragmentation.

Similar to the uneasy mixture of iron and clay in the feet and toes of the image, some governments have been ironlike—authoritarian or tyrannical—and others have been claylike—more pliable or democratic. Understandably, they have been unable to stick together in a world unity. Pinpointing this in our day, the German book *Unsere Welt—Gestern, Heute, Morgen; 1800-2000* (Our World—Yesterday, Today, Tomorrow; 1800-2000), says: "By the 19th century, democratic freedom prevailed in nearly all civilized countries, and by the end of World War I, freedom's cause seemed to have approached final victory. . . . With the revolution in Russia in 1917, dictatorship rose up anew. Since then the 20th century has been characterized by coexistence and confrontation between dictatorship and democracy."—Italics ours.

People Power

Note also that during the rule of the 'ten toes,' the common people, "the offspring of mankind," would become increasingly involved in government. Do the historical facts support this prediction?—Daniel 2:43.

Democracy, government by the people, was extremely popular right after World War I, even though during the 1920's and 1930's, democratic regimes in different parts of the world were replaced by dictatorships. After World War II, decolonization once again produced a number of new democracies. Later, in the 1960's and 1970's, however, many

former colonies chose more authoritarian forms of government.

Nevertheless, in the 20th century, the trend has been to replace monarchies and autocratic governments with democracies or governments of the people. "The Year of the People" is how *Time* magazine described last year's political upheavals in Eastern Europe. And when the Berlin wall finally fell, the German newsmagazine *Der Spiegel* emblazoned its front cover with the words "*Das Volk siegt*" —the people win!

Long on Talk, Short on Action

In all the Eastern European countries where people power has forced political reform, the demand has been for free elections with a plurality of political parties participating. In their present form, political parties originated in Europe and North America during the 19th century. Since the middle of the 20th century, they have spread throughout the world. Today, they are larger, stronger, and better organized than ever before. By means of them, as well as by means of labor unions, lobbies, environmental groups, and untold other citizen and special-interest groups, people power is now speaking more often and more loudly than ever before.

As the number of people involved in the political process increases, however, so also does the difficulty in achieving a political consensus. Amid a multitude of contending opinions and interests, minority governments often result, stalemated governments long on talk but short on action.

Like iron and moist clay, the entire global political mixture since 1914 has been fragile. Gone, for example, are the days when people appealed to divine guidance in matters of government. "Men in Western civilization have thus been thrown back wholly on themselves, and they find themselves wanting," concludes *The Columbia History of the World*.

Room for Optimism?

"Why should all these distinct but related developments have come together in the second half of the 20th century? Why have these threats of world breakdown emerged in precisely the era when man has achieved more scientific breakthroughs and knowledge than in all his previous history?" These questions posed by journalist Geyer are thought provoking. But does anyone have the answers?

Almost ten years ago, *The World Book Encyclopedia* optimistically noted: "We probably have a greater chance of solving the problems of our times than any previous generation." But now, a decade later, at the beginning of the 1990's, is there still room for optimism? 'Yes,' you may say, pointing to the end of the Cold War, to the greater cooperation between East and West, and to the substantial progress being made in world disarmament.

The Bible foretold that they would do so. It indicates that during the reign of the seventh world power of Bible history, a contemporaneous eighth power would be specifically set up for the purpose of uniting the nations. (Revelation 17:11) But would it succeed? Part 9 of "Human Rule Weighed in the Balances" will answer.

IN OUR NEXT ISSUE

Global Brotherhood—When?

I Was a Hostage

**A Down-to-Earth Look at
Footwear Fashions**



Bridging the Gap Between Doctors and Witness Patients

DOCTORS the world over know basically one thing about Jehovah's Witnesses: They refuse blood transfusions. However, many doctors know little else about the Witnesses. So when they want to transfuse blood into a Witness patient, a refusal may strike them as completely unreasonable. Thus, a lamentable gap may separate physician and patient.

All too few doctors realize that Jehovah's Witnesses are not against medical treatment and that their stand on blood is both non-negotiable and firmly rooted in Scriptural law. Meanwhile, the reasonableness of this Scriptural stand has been steadily vindicated by a flood of new scientific findings on both the dangers of homologous transfusions and the safety of alternatives to transfusion. But how can Jehovah's Witnesses get this information across to the medical community?

Hospital Liaison Committees

To that end, the Governing Body of Jehovah's Witnesses directed the establishing of hospital liaison committees in major cities with large medical institutions. In the United States, some one hundred committees, with an average of five ministers on each, are already forming a bridge between the medical world and the Witnesses. Earlier this year the arrangement was extended to other lands. From February 19 to March 27, three members of the Hospital Information Services in

Brooklyn visited eight branch offices of Jehovah's Witnesses in the Pacific area.

The purpose was threefold: to hold seminars to train preselected Witness ministers for hospital liaison committee work, to train branch personnel to manage a Hospital Information Services desk in each branch, and to visit hospitals and doctors so as to encourage continued and expanded treatment of Jehovah's Witnesses without using blood. Four seminars were held: one in Sydney for Australia and New Zealand; one in Manila for the Philippines, Hong Kong, and Taiwan; one in Ebina City for Japan and Korea; and the last one in Honolulu for Hawaii.

The program used both slides and video to explain the function and content of blood and the growing list of medical alternatives to homologous blood. The discussions covered ways to help Jehovah's Witnesses when they face problems involving blood. The seminar also stressed the value of cooperating with doctors and hospitals, thereby making it easier for them to respect the Witnesses' stand. One Japanese committee member said: "The program really equipped us to embark on the work of cultivating understanding." More than 350 Witnesses from all walks of life were trained at the four seminars.

Before the visits, the branch offices made appointments with prominent surgeons and senior staff members at major hospitals to discuss nonblood treatment for Jehovah's

Witnesses. Three teams at each branch were assigned to make these visits, each one headed by one of the three representatives from Brooklyn. This not only gave on-the-spot training to those assigned to be hospital committee members but also made them feel comfortable when talking with doctors and health-care professionals. More than 55 such calls were made in this six-week period.

Bridges of Cooperation

The results were gratifying. In Australia one visiting team met with the assistant to the minister of health for the state of New South Wales. They discussed with him the performing of operations without blood at many health-care centers, suggesting that Australia could become a center for such surgery for Jehovah's Witnesses in the South Pacific. He saw no reason why teams of doctors could not be set up to do such surgery. Twenty-two visits were made in Australia. One director of a hospital said: "You know more about the subject of blood and alternative treatment than we do." The chief executive of a group of seven hospitals gave assurance that he was going to appoint a professor of surgery to pursue the idea of establishing a team of surgeons at one of their hospitals to provide bloodless treatment for Jehovah's Witnesses.

At Manila's heart center—considered by some to be the best in the Orient—it was pointed out to the medical director that about a hundred of Jehovah's Witnesses awaiting heart surgery were put at the end of the line because they would not take blood. She said that she would put a stop to that practice. The medical director of the Philippines' most prestigious hospital, St. Luke's, was shown what the medical literature is now saying about bloodless surgery, and he agreed that it is safer. "It is the coming thing," he admitted. "It is the only way we can avoid AIDS and hepati-

tis." He indicated that he was prepared to give Witnesses the opportunity to get bloodless treatment at his facility; he is also president of the hospital's blood bank.

At Japan's three-day seminar, Korea was represented as well, with a delegation of 44 of Jehovah's Witnesses, 5 of whom were doctors. From Japan came 255 Witness ministers, including 41 doctors, among them some neurosurgeons and anesthesiologists, plus 2 lawyers. Twenty committees were established in Japan, and seven in Korea.

After the seminar, the instructors went with local hospital committee members to visit doctors and hospitals in the Tokyo area to foster a cooperative relationship. "We visited an assistant professor of obstetrics at a university hospital," reports one Japanese minister. "He had delivered babies for at least ten women who are Jehovah's Witnesses. One of them had lost 2,800 cubic centimeters of blood, and her hemoglobin level went down to 3.5 grams/deciliter. (The average for women is 14 grams/deciliter.) But the doctor managed the delivery without blood. Although a Buddhist, his policy is to respect his patients' beliefs. He agreed to continue accommodating patients who are Jehovah's Witnesses."

A medical director in Yokohama agreed to have his hospital listed among those willing to cooperate and said that they will be happy to accept Witness patients rejected by other hospitals. "To treat Jehovah's Witnesses without blood," said the doctor, "is indeed a challenge, but I appreciate the Witnesses because they have given me opportunities to improve my skill as a doctor." It was also in Yokohama that one gynecologist said: "I would fight for patients' rights in court if I were sued for respecting the patient's will and not giving blood transfusions."

The committees that were set up for Korea are reporting good success. On May 26 a visit



was made to the Yonsei University Hospital. It is well-known throughout Korea and has three branches. Members from all these facilities attended, making a total of 62. A professor of anesthesiology talked on "Anesthetic Management of Jehovah's Witness Patients." The information he gave will be written up in a journal of anesthesiology in Korea. Since it is one of the outstanding hospitals in Korea, this should have a good influence on other hospitals and doctors. No question came up that was not thoroughly covered at the seminar in Japan.

Five liaison committees were set up for Hawaii, and all of them came to Honolulu for the seminar. Most of them were taken on hospital visits. At the Hawaii Healthcare Center, the director said he would write an article about

us in their newsletter to send to all the hospitals in Hawaii.

At the largest health-care center, Queen's in Honolulu, the committee pointed out that the consent form used by the center contained an inaccuracy in wording that misrepresented Jehovah's Witnesses. It implied that Witnesses would rather die than have a "lifesaving" blood transfusion. It was clarified that this was not our position at all, that we came to the hospital to protect our health and life. Their wording made it appear that blood was all good and that no blood equals death. Their wording failed to admit the possibility of death due to transfusions, thus not offering the patient an informed choice as to which risks he was willing to take. The hospital lawyer said: "Let me see that!" As he read it, he

said: "I didn't write this!" As the lawyer and the administrator left, the administrator said to the lawyer: 'I think we ought to go over this document together.'

New Committee Fulfills Its Purpose

Within days after the training session in Hawaii, a Witness was rushed to the hospital severely anemic, her blood count dangerously low. No bleeding could be found; exploratory surgery was needed. The doctor would not operate without blood. She was transferred to another hospital where another doctor also refused to operate. The newly formed liaison committee appeared, talked with the medical director and the attending physician, and explained that, in effect, the patient was being abandoned. The doctor still refused to operate and was dismissed from the case. Two other surgeons were brought in. They performed the operation, found the source of the bleeding, and corrected the problem. Our sister survived. Without the liaison committee's intervention, she may have died, and the media would have described it as another case of a Witness 'dying without needed blood.' In actuality, in such cases the Witnesses have died without needed surgery when competent surgeons could have saved them.

Genesis 9:3, 4:

"Every moving animal that is alive may serve as food for you. As in the case of green vegetation, I do give it all to you. Only flesh with its soul—its blood—you must not eat."

Leviticus 17:10-12:

"As for any man of the house of Israel or some alien resident who is residing as an alien in your midst who eats any sort of blood, I shall certainly set my face against the soul that is eating the blood, and I shall indeed cut him off from among his people. For the soul of the flesh is in the blood, and I myself have put it upon the altar for you to

On an international scale, then, hospital liaison committees are working to bridge the gap between the medical community and Jehovah's Witnesses through meaningful communication and mutual understanding. The results have been gratifying. More and more doctors are coming to see that good medical practice and skillful surgery can well accommodate the beliefs of Jehovah's Witnesses. In the United States, over 6,500 doctors are willing to do so.

On their part, Witnesses should continue to make every effort to be cooperative and reasonable patients. In that way, some doctors even come to respect the Witnesses for their adherence to high principles. As an assistant professor of urology at a medical college in Tokyo said: "I respect patients who are Jehovah's Witnesses. They have specific values in a world where no one else has."

The overall goal of these seminars and visits was to promote more respectful cooperation and thus avoid confrontation. All of those involved in this effort felt that this goal was achieved with gratifying success. We trust that Jehovah will continue to bless these endeavors and sustain those who obey Jehovah's direction to abstain from blood, as his Word commands them to do.

make atonement for your souls, because it is the blood that makes atonement by the soul in it. That is why I have said to the sons of Israel: 'No soul of you must eat blood and no alien resident who is residing as an alien in your midst should eat blood.'"

Acts 15:28, 29:

"For the holy spirit and we ourselves have favored adding no further burden to you, except these necessary things, to keep abstaining from things sacrificed to idols and from blood and from things strangled and from fornication. If you carefully keep yourselves from these things, you will prosper. Good health to you!"



Will an Afterschool Job Help Me Grow Up?

TWO out of three—that is how many teenagers in the United States are currently working. And they are logging from 16 to 20 hours a week doing so!*

Why are youths in record numbers flocking to jobs? Explains 16-year-old Brian: "In my case I have to [work]. My mother and father are divorced, and I have to help my mom any way I can." Many families similarly need economic assistance. And even when a youth does not directly contribute to household expenses, if he simply pays for his own clothes or other personal items, this effectively relieves his parents of some economic pressure.

True, many youths work so as to indulge their taste for expensive clothes, shoes, or fast foods. But for some youths, a job primarily means a big step toward adulthood. Wrote 19-year-old Suzanne in *Seventeen* magazine: "I work because I enjoy being self-sufficient. I don't have to depend on my parents to pay my way. . . . Parents can give their children money, but they cannot give them the feeling of satisfaction that comes from earning something." And perhaps you feel the same way

* The growing number of working students has been called "a distinctively American phenomenon." (*When Teenagers Work*, by Ellen Greenberger and Laurence Steinberg) Greater academic burdens are placed upon youths in other lands, and jobs are often scarce. Nevertheless, this article will no doubt be of interest to many youths in lands where some job opportunities do exist. A future article will deal with the situation in developing lands.

—that having a job would be a good experience, that it would help you grow up more quickly. But would it really do so?

Working—The Benefits

The Bible condemns laziness. "The lazy one is showing himself desirous, but his soul has nothing," says Proverbs 13:4. "However, the very soul of the diligent ones will be made fat." So if you really need something that costs more than your parents are willing, or can afford, to pay, the idea of working diligently so you can buy it yourself may have merit.

Many further argue that working can help teach a youth about life in the real world. Ellen Greenberger and Laurence Steinberg have done some extensive and highly publicized research on the subject of working youths. They found that such youths "learn about business operations, money management, and consumer arithmetic." A job can also expose a youth not only to the experience of working side by side with adults but also to adult pressures and responsibilities. He may have to learn how to work under a boss who is "hard to please" or ill-tempered, or how to deal kindly with irate customers—and workmates. (1 Peter 2:18) "I was the youngest guy on the job," recalls Anthony, "and everybody had it in for me. But I learned how to deal with people."

A job can teach a youth how to deal with employers and workmates in an adult manner



Working can also teach a youth skills and work habits, such as punctuality, that can prove useful later in life. (Compare Proverbs 22:29.) "I learned responsibility," says a young man named Eric. "Working with my uncle taught me how to do quality work," adds Duane. "He stressed neatness, and if everything did not come out perfect, we did it over again." Adds Olga, who did secretarial work while in school: "I gained good work experience. And having to talk a lot on the telephone taught me to use good speech."

Working can also teach you the pride of accomplishment. Said wise King Solomon: "With a man there is nothing better than that he should eat and indeed drink and cause his soul to see good because of his hard work. This too I have seen, even I, that this is from the hand of the true God."—Ecclesiastes 2:24.

How Much Does One Really Learn?

Nevertheless, many believe that today's jobs do little to help a youth grow up. In times past, working youths learned a trade or at least some useful skills. Today, however, many youths (in the United States especially) work in fast-food restaurants or other service industries where work consists of such tasks as stuffing hamburgers into boxes or ringing up sales on cash registers. Many question the long-term value of such work. Greenberger and Steinberg lament: "The average youngster spends less than 10 percent of his or her time on the job—only about five minutes of every hour—in activities such as reading, writing, and arithmetic. . . . Most jobs are characterized by little task variety, highly routinized activity, and the constant repetition of fairly uninteresting tasks."

An article in *The Wall Street Journal* states: 'A lot of today's working teens aren't learning anything much more useful than just show-

ing up. Technology has turned them into near-automatons. Checkout scanners and sophisticated cash registers tot up bills and figure the change for them. At fast-food joints, automatic cooking timers remove the last possibility that a teen might pick up a smidgen of culinary skills.⁷ Such jobs unquestionably provide needed and valuable services. However, they may do little to equip a youth for the adult job market.

But what about the experience of working with adults? Say Greenberger and Steinberg: "The workplace in which young people are employed has become increasingly age-segregated. Rather than working side by side with adults, . . . today's young people are more likely than not to work side by side with other adolescents." *The Wall Street Journal* calls such job sites "adolescent ghettos."

"Premature Affluence"

Many youths in the United States are earning over \$200 a month on their jobs. Would not handling this money be a valuable experience? Consider a survey of employed high school students from over a thousand different schools. It was discovered that three quarters of them contributed *nothing* to family finances! Nearly 60 percent of them put away *nothing* for savings! Free of the burden of paying for rent, insurance, and meals, the majority used their earnings as pocket money—to spend as they pleased.

Jerald G. Bachman of The Institute for Social Research says that when "teenagers have a good deal of money at their disposal," it is "premature affluence," or wealth. Why so? Explains Bachman: "Many high school students have budgets for luxury items which they may not be able to sustain five years later, when their earnings will have to cover such nonluxury items as food and rent." Yes, rather than teach a youth financial responsi-

bility, having too much money can teach the very opposite. It may create an unrealistic taste for luxury and make the transition into the real world of adulthood even more traumatic.

The Bible further shows that toiling for wealth is a vain pursuit. It says: "Do not toil to gain riches. . . . Have you caused your eyes to glance at it, when it is nothing? For without fail it makes wings for itself like those of an eagle and flies away toward the heavens." —Proverbs 23:4, 5.

Whether a job proves to be a valuable learning experience will depend upon the type of work involved, the kind of people you work with or for, and how you apply yourself on the job. Your motive for working and how you handle what money you earn will also make a big difference in whether working helps you or hurts you.

But if growing up is what you're really interested in, note what Greenberger and Steinberg concluded: 'There are activities available that may be more beneficial than working. These activities include reading and studying outside of school and taking on the responsibilities of unpaid volunteer work or community service.' Nina, for example, performs a most valuable community service after school as a full-time minister of Jehovah's Witnesses. She says: "I worked it out with my guidance counselor to have a short school day so I would get out of school near noon. Monday through Wednesday I go out in the public preaching work. I love doing it. I just love it!" Would your schedule and personal circumstances permit you to do likewise? Developing "godly devotion" in this way would no doubt prove to be far more beneficial than working at some job!—1 Timothy 4:8.

But some youths may want, or need, to work for financial reasons. Future articles will weigh the pros and cons of doing so.

WATCHING THE WORLD

EMPLOYEE THEFT

Crime costs British industry more than \$9,000,000,000 a year, asserts John Banham, director general of the Confederation of British Industry. Of this total, from two to three thousand million dollars is due to employee theft. Reporting the results of a recent survey, the London *Daily Telegraph* reveals that 85 percent of those contacted would not report a colleague to their superior for stealing from the company. Of other dishonest practices, the poll noted that attitudes varied with age. Whereas more than half the employees over 45 years of age found it unacceptable to use company telephones for private calls, less than one in four of the 16 to 24 age group disapproved. Also, only 19 percent of this younger group considered using work time to talk of matters unrelated to company business to be "time theft."

INFANT MORTALITY RATE

The United States now almost tops the list of developed nations with high infant mortality rates, says Dr. Regina Lederman, an associate dean and a professor at the School of Nursing of the Medical Branch of The University of Texas. Twenty years ago the United States was in 5th place internationally for having healthy infants, but by 1987 it had dropped to 20th place. America is beset by drug and alcohol abuse, AIDS, poor nutrition, homelessness, stress, an epidemic of teen pregnancy, and the effects of smoking. All contribute to low birth weight, the overwhelming threat to newborn life and the cause of many lifelong handicaps. According to Lederman, between 1950 and 1987, a national commit-

ment to health care for women and children boosted Japan from 17th place to first place, achieving the world's lowest infant mortality rate. "Virtually all studies show prenatal care increases the chances of a normal birth and healthy baby," says Lederman. "Ideally, prenatal care begins before conception."

APE DECLINE

The large tailless monkeys of the Rock of Gibraltar known as Barbary macaques are dwindling in number, reports *The Times* of London. The apes have till now foraged freely on the Rock under the care of the British army garrison. But many of the three-and-a-half million tourists who visit every year



feed the monkeys chocolates and other candies. As a result, obesity and addiction to sweets make some Barbary macaques "lose interest in mating and fight over food." This has caused a fall in the animals' birth rate, and its population has decreased from 130 to 70. To counteract this, the Gibraltar government has now established a walled park where one troop of monkeys will be protected and put on a less sugary regimen consisting mainly of food pellets. The park director hopes that this will result in normal conduct and help preserve this endangered species.

EUROPEAN NATIONAL PREFERENCES

"Managers of the Nineties," reports *The European*, "will have to overcome more than language barriers" to get a job abroad. Studies carried out in Europe indicate that "definite national preferences" exist when it comes to hiring foreigners. In a survey of 700 British companies, Germans and Dutch were found to be compatible with over one third, whereas Italians and Spaniards are less popular. French and Belgians are often acceptable as foreign employees, but the Swiss are said to be too expensive and demanding. For Spanish companies, the best alternatives are French. British and Dutch like to delegate, but French and Italians do not. "People are different" comments the newspaper, "and therefore judge efficiency differently."

WHY CHILDREN RUN AWAY

Australia's *Canberra Times* analyzed reasons why children run away from home. For some, it's a spur-of-the-moment decision. Some leave for the adventure of it. Most of these runaways soon get hungry and lonely and return after a few days. But others have deeper reasons, such as school problems, alcoholic parents, physical or sexual abuse, and parental marriage breakup. Those who leave home for these reasons stay away longer, some permanently. They may turn to prostitution and to petty crime to get money to live on. The warning signs are: constant arguments in the home, staying out very late at night on a regular basis, and persistent truancy. To lessen the chance of a runaway, the article lists these suggestions for parents:

'Provide a warm, loving home environment; achieve a balance between being overindulgent and overauthoritarian; give children autonomy and responsibility; develop effective communication skills, especially the ability to listen; provide fair and consistent discipline.'

BUDDHAS TO PROTECT FORTUNE

Jewelers in Japan report that gold statues of Buddha suddenly constitute their best-selling items. Why? Gold items have become cheaper since a new tax system was introduced. Additionally, there is a popular conviction that these religious statues are exempt from inheritance tax. The Tax Agency, though, is threatening to tax statues of Buddha that have been bought to circumvent the law rather than for their religious significance and use. Jewelers point out, too, that the labor involved in fashioning a Buddha increases the price by up to 75 percent of the value of the gold, making it an unwise investment.

HIGHWAY KILLERS

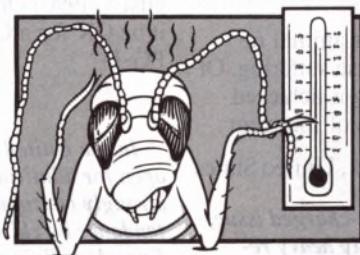
□ "A lot of people who are getting killed on the highways are using cocaine," says Dr. Peter Marzuk, coauthor of a study published in *The Journal of the American Medical Association*. The study, made because New York City traffic fatalities had increased, showed that 56 percent of those killed had residues of cocaine or alcohol, or both, in their bodies at the time of death. Marzuk thinks a lot more drivers are using cocaine than the study showed. Some do not get killed, while others who are killed did not use enough so that it could be detected.

□ "Falling asleep at the wheel causes about 6,500 traffic deaths annually and may cause up to

400,000 accidents a year" in the United States, says *Science* magazine, reporting on the findings of neurologist Michael Aldrich, a University of Michigan sleep researcher. Up to 25 percent of the population suffer from sleep disorders, says Aldrich, and are the ones most likely to drowsy while driving. Sleep apnea, where breathing stops often during the night, is the most common, and leaves the sufferer feeling exhausted the next day. However, the highest number of accidents happened to those afflicted with narcolepsy, a condition that produces sudden sleep "attacks."

COCKROACH CONTROL

"Cockroaches can withstand a higher dose of radiation than humans can," says Richard Brenner of the U.S. Agricultural Research Service, "but they cannot thermoregulate, so heat that we can stand—because we sweat to keep our body temperature down—will kill them." Now a California pest control company is using that fact to rid houses of cockroaches and



other pests. An infected house is encased in a canvas tent. Propane burners and fans are installed inside to raise the temperature there to about 150 degrees Fahrenheit. "After four hours at that temperature, every part of the building will have reached more than 50° C [122° F.], which is enough to kill cockroaches, ants, flies, ticks, moths and even termites," says *New Scientist*.

"FOR BETTER OR FOR WORSE"

"Marriages, it is said, are made in heaven," states *India Today*. "But for these two couples in Patan village, marriages seem to be unmade on earth." It happened when two separate wedding parties arrived for their marriages at the same time. Both were in a hurry, and the ceremonies were quickly performed. The shock came when the long veils obscuring the faces of the brides were removed, and a mix-up of the brides was discovered. "Even though the brides were horrified at the exchange, relatives insisted that what was done could not be undone," says *India Today*. "So now, for better or for worse, the couples have to stick it out till death do them part."

Egyptian Art Time Bomb

"Painters in Ancient Egypt created colourful works of art, frescoes, coloured statues, coffins and tombs. They were a highly specialised guild and found the first synthetic colour, a bright 'Egyptian blue,' more beautiful than all natural blue colours available to them," notes *The German Tribune*. But they "did not realise that with their Egyptian blue they were introducing a Trojan Horse into their works of art. It contained a chemical virus which could destroy them." The culprit is atacamite, a mineral not intentionally added but which, researchers found, appeared later through a chemical reaction, gradually changing the blue to green. The process continues under humid conditions, loosening the pigment and causing it to crumble away. Much of the dampness comes with visits of tourists, leaving Egyptian authorities with a dilemma: close sites to tourism, upon which the country depends financially, or risk losing all blue and green colors within a century.

FROM OUR READERS

Animal Research I hesitated to read the issue on animal research (July 8, 1990) because I knew it was an emotional subject. But you handled it in a tactful and balanced way.

N. V., United States

Since research is my line of work, I was more than eager to read what *Awake!* had to say. It is clear that the Bible does not condemn animal research, yet it does not justify cruelty to animals. If my work requires the use of animals in the future, I will be careful not to waste them or be cruel to them.

O. O., United States

Your article was disappointing. You devote five paragraphs to violence by activists (which is not widespread). The "horror stories," however, were summed up in one subheading. How can a person maintain a balanced attitude in view of such base cruelty? Yes, animal research has contributed to medical progress. But couldn't we call a halt to it now?

S. F., Federal Republic of Germany

Your article appeared to favor animal research if it doesn't involve intense suffering. Of what value is it when something is achieved through the suffering and death of innocent animals?

M. B., United States

Animal research is an emotion-charged issue, and our articles drew an unusually heavy response from readers. The Bible makes no blanket condemnation of using animals to benefit humans. But, understandably, many are repulsed by any sort of animal suffering, and we certainly respect their feelings in this regard.—ED.

Crack Addiction I had to write to let you know that your articles on crack addiction (July 22, 1990) were very informative. As a former crack addict, I was able to break free from

crack only when I began to study the Bible and associate with Jehovah's Witnesses. I used to use my rent money, car-payment money, and stolen money to get crack. I became so thin I looked like a skeleton. But with the support and guidance of Jehovah's Witnesses, I found the cure.

C. H., United States

Movies The article "Young People Ask . . . Does It Matter Which Movies I See?" (July 22, 1990) helped me realize the power that movies have over people. I will not see any more R-rated movies.

W. R., United States

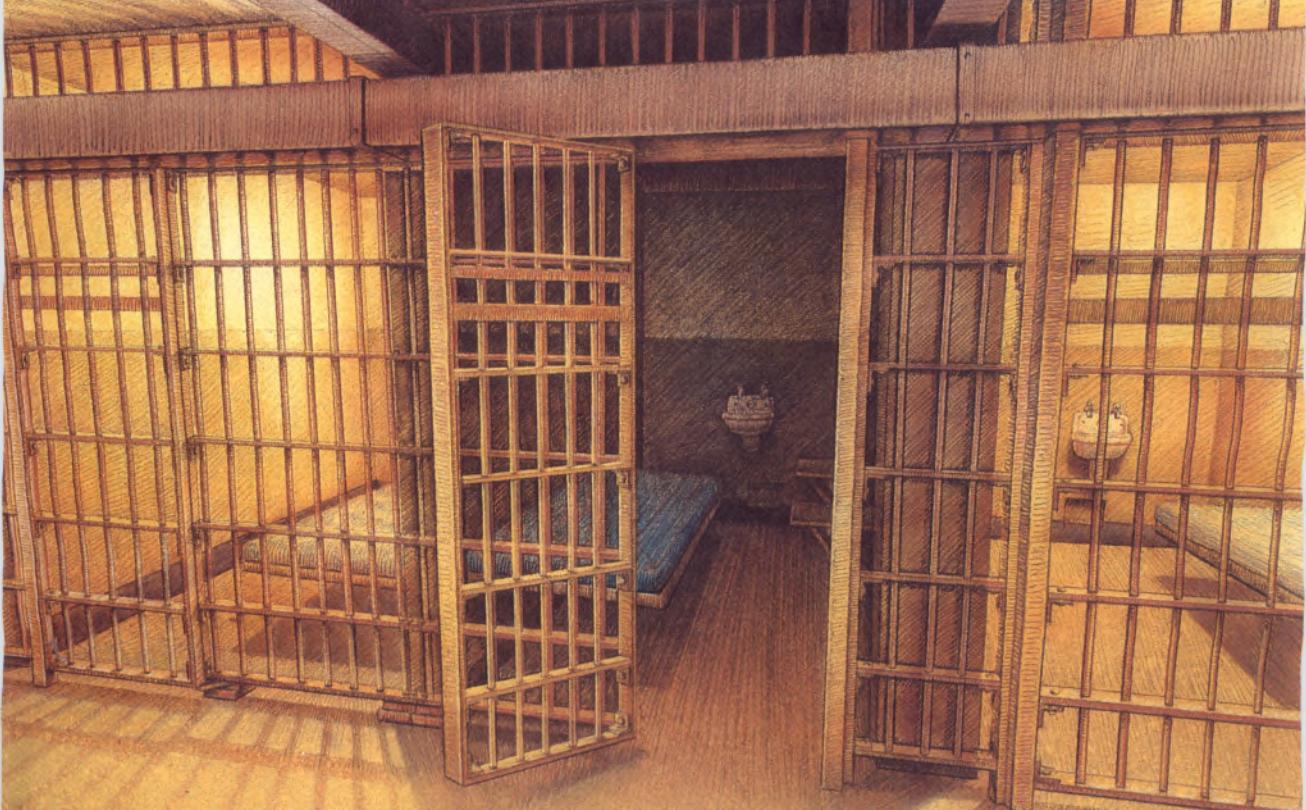
I don't often go to movies, so I've started reading books about animals, crafts, and history. There are many wonderful books that are good and educational and that do not use profanity.

L. H., United States

I really liked your article "Young People Ask . . . How Can I Pick a Decent Movie?" (August 8, 1990) One thing still puzzles me. Would it be OK for a Christian to see a movie rated PG-13?

R. J., United States

In the United States, a movie rated PG-13 is open for admittance to all ages, "but parents are strongly cautioned to give special guidance for attendance by children under 13." ("World Book Encyclopedia") A Christian would naturally be cautious if a film carried such a rating. However, movie ratings reflect worldly standards, not Bible principles, and such standards are often inconsistent. So in lands where a movie-rating system exists, individuals must decide to what extent they will be guided by it. Youths should follow the direction of their parents. If, despite a seemingly favorable rating, a film turns out to be unwholesome, one can leave the theater or turn off one's television set.—ED.



Quebec Shows Respect for Freedom

A RADIO broadcaster in Montreal, Quebec, noted recently on the evening news that Jehovah's Witnesses have long been harassed in that Canadian province "because they are different." He focused on a recent attack made via radio by Yvon Picotte, the minister for municipal affairs. The broadcaster reported that Picotte "called the Witnesses 'parasites on society' who, in many cases, live off welfare. Thus, Picotte insulted not only Jehovah's Witnesses but anyone who has to rely on social assistance."

The broadcaster rebutted Picotte's charge by noting that the proportion of Witnesses on welfare is no higher than that of any other religion. "They no more deserve to be called 'parasites' than does Mr. Picotte," he said. "In fact, come to think of it, there are those who argue that the real social parasites in our society are the politicians."

"What piqued my interest in Picotte's ridiculous tirade," the broadcaster continued, "was its 'flash-back' or 'déjà vu' aspect. Back in the late '40's, Maurice Duplessis, the autocratic premier of Quebec and self-appointed defender of the Roman

Catholic faith, put some 400 Jehovah's Witnesses in jail, not for ringing doorbells—which Picotte took such strong exception to—but on charges of 'sedition.' In the law according to Duplessis, distributing religious pamphlets was a seditious act! The Witnesses had their meeting places padlocked and were subjected to merciless persecution by the provincial police."

Duplessis' 1946 announcement of "War Without Mercy on the Witnesses of Jehovah" was also attacked by the press. Headlines cried: "The Dark Ages Return to Quebec," "Return of the Inquisition," and "The Stench of Fascism!"

Now, 50 years later, this Montreal broadcaster concluded: "While we still have a few Neanderthal politicians, their egregious rantings are no longer tolerated. In fact, Picotte, who would have been applauded by Duplessis, was ordered by Mr. Bourassa [the current premier of Quebec] to apologize for his remarks in the National Assembly today. Civil libertarians take heart. We have come a long way since people in this province were jailed for propagating their faith."

Gli studenti di oggi sono i leader di domani

Il mondo è diverso dall'anno scolastico scorso. L'anno scolastico scorso, gli studenti hanno dovuto adattarsi a un mondo che è diventato più digitale e interconnesso. I tecnologi, i linguaggi di programmazione, le applicazioni e le piattaforme digitali sono diventati parte integrante della vita quotidiana.

Le tecnologie hanno trasformato la scuola in uno spazio dove gli studenti possono imparare attraverso l'esperienza e la curiosità. I programmi di studio sono diventati più interattivi e coinvolgenti, mentre gli insegnanti hanno adattato le loro lezioni alle nuove tecnologie.

Le tecnologie sono anche state utilizzate per promuovere la partecipazione attiva degli studenti. Gli insegnanti hanno creato piattaforme interattive come i forum di discussione, i blog e i portafogli digitali per consentire agli studenti di esprimere le loro idee e di collaborare con i compagni. Inoltre, gli insegnanti hanno utilizzato le tecnologie per creare contenuti didattici personalizzati, che si adattano alle diverse appren-

tive dei singoli studenti. Inoltre, le tecnologie hanno consentito di creare una maggiore connivenza tra gli studenti e gli insegnanti, attraverso la comunicazione continua e il supporto continuo. Inoltre, le tecnologie hanno consentito di creare una maggiore connivenza tra gli studenti e gli insegnanti, attraverso la comunicazione continua e il supporto continuo.

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