

Awake!

MARCH 22, 1984

THE BISHOPS AND THE BOMB



WHY DO THEY OPPOSE IT NOW?

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 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 Order before the generation that saw the events of 1914 passes away.

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Awake! (ISSN 0005-237X) is published semimonthly for \$3.50 per year 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 Watchtower, Wallkill, N.Y. 12589.

Printed in U.S.A.

Feature Articles

Almost 40 years ago, man violently entered the nuclear age. The years that followed saw a growing protest against The Bomb. A number of bishops recently joined in the protest, although up to that time religious leaders seemed to be more for than against The Bomb. This series of articles discusses the change in their position, the possible reasons for it, and how much the bishops' involvement will help the antinuclear movement. Also answered is the very important question: Will we ever see an end to the menace of The Bomb?

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十五条美金(美国)一份

年订价

每期

America, U.S., Watchtower, Wallkill, N.Y. 12589	\$3.50
Australia, Box 280, Ingleburn, N.S.W. 2565	A\$5.00
Canada, Box 4100, Halton Hills (Georgetown), Ontario L7G 4Y4	\$4.00
England, The Ridgeway, London NW7 1RN	£4.00
New Zealand, 6-A Western Springs Rd., Auckland 3	\$5.00
Nigeria, P.O. Box 194, Yaba, Lagos State	N\$3.50
Philippines, P.O. Box 2044, Manila 2800	P35.00
South Africa, Private Bag 2, Elandsfontein, 1406	R4.80

汇款请寄至美国纽约市瓦基尔街25号。

由

Watchtower Bible and Tract Society
of New York, Inc.

25 Columbia Heights, Brooklyn, N.Y. 11201, U.S.A.

Frederick W. Franz, President

THE MENACE OF THE BOMB

"Over the wreckage of the Urakami Valley towered a monstrous expanding pillar of smoke shooting upward from the middle of the explosion at incredible speed. Like a genie released after countless ages of captivity, the column writhed and twisted toward the stratosphere. . . . The deadly apparition seethed up toward the circling planes. It changed faces, it changed colors from purple to salmon to gold to soft white."

—The Fall of Japan, by William Craig.

THIS was the scene at Nagasaki on the morning of August 9, 1945, just minutes after an atomic bomb was dropped there. The explosion was terrifyingly beautiful. But there was nothing beautiful at the base of the fireball. "People by the hundreds lay on the streets, in the fields, in wreckage, and screamed for water. Creatures that barely resembled human beings walked dazedly, skin hanging down in huge flaps, torsos blackened." Forty thousand people died that morning, as almost a hundred thousand had died three days earlier in Hiroshima.

The bombs dropped on Hiroshima and Nagasaki, though primitive by today's standards, were the only nuclear bombs ever dropped on men, women and children. Nevertheless, those fiery, mushroomlike columns of death have become an enduring nightmare in the collective consciousness of the human race. With a horrible vividness they showed on a small scale what could happen worldwide if mankind ever fought an all-out nuclear war.

It is hardly surprising, then, that many voices have been raised in a continuing—but so far unavailing—protest against the relentless growth of the world's nuclear arsenals. Recently, though, these protest-

ers have had new, unexpected allies—prominent individuals and organizations of Christendom.

For many of these religious groups, this has been a startling reversal of positions. Back in 1950, *The New York Times* reported: "The Vatican, through its official newspaper, L'Osservatore Romano, assured the United States Government and people today that it fully understood the reasons why President Truman had decided to approve the construction of a hydrogen superbomb." In 1958, according to a news dispatch from Denmark, a special commission of the Protestant World Council of Churches had concluded: "A Christian could in conscience agree to the use of atomic arms in a limited war."

Some individual leaders were even more pro-Bomb. In 1958 the Archbishop of Canterbury went so far as to say: "For all I know it is within the providence of God that the human race should destroy itself in this manner [by nuclear bombs]." And in 1961 the English *Daily Express* reported: "Britain should keep the hydrogen bomb, the Archbishop of Wales . . . said yesterday. It might lead men to Christ."

How remarkable, therefore, to hear many Protestant and Catholic organizations now speaking out *against* nuclear weapons! Why have they changed their views? What are they now saying? And will it really make a difference in the long run?

WHY THE BISHOPS OPPOSE IT NOW

"NEVER before has the human race been as close as it is now to total self-destruction." With these words the sixth assembly of the World Council of Churches, meeting last summer in Vancouver, Canada, sounded the alarm against The Bomb. Urging nuclear disarmament, they proclaimed: "Nuclear deterrence is morally unacceptable because it relies on the credibility of the *intention to use* nuclear weapons."

A few months earlier, in May 1983, the Roman Catholic bishops in the United States issued the final text of a long letter entitled "The Challenge of Peace:

God's Promise and Our Response." In this, they urged a reduction in existing nuclear stockpiles as well as a halt to "the testing, production and deployment of new nuclear weapons systems." They insisted: "There must be no misunderstanding of our profound skepticism about the moral acceptability of any use of nuclear weapons."

These were two of the more outstanding recent declarations by religious leaders against nuclear weapons. Some have reacted with delight to the involvement of the bishops in the anti-Bomb cause. A Presbyterian minister, quoted in *The*



New York Times, said of the letter by the U.S. bishops: "In it you hear a voice of moral conscience, not just speaking to Catholics but speaking to us as Americans and as decent human beings . . . God bless the Catholic bishops."

Others are more critical. Philosopher Sidney Hook said: "The bishops' position is uninformed, unrealistic and morally irresponsible." And conservative activist Phyllis Schlafly was quoted as saying that the bishops' statement is dangerous because it leads Catholics down the road of "pacifism . . . and disarmament and loving the Russians."

Nevertheless, given the long history of clerical involvement in wars, and pro-Bomb statements by religious leaders in the years since the second world war, these recent anti-Bomb statements mark a startling turnaround. Why the change?

Forty Years Late

The U.S. bishops' letter offers an explanation of sorts: "Today the destructive potential of the nuclear powers threatens the human person, the civilization we have slowly constructed, and even the created order itself." Yet this has been true ever since those atomic bombs exploded over Hiroshima and Nagasaki almost 40 years ago. Why was there no hue and cry back then?

The World Council of Churches says: "We believe that any intention to use weapons of mass destruction is an utterly inhuman violation of the mind and spirit of Christ which should be in us." Well, was that not also true when civilians were being massacred by the hundreds of thousands during the last world war? Yet few church leaders spoke up then.

Nuclear physicist Harold M. Agnew voiced his opinion bluntly: "I think they are hypocrites in that they seem to be

The “Just War” Theory



Christendom has traditionally countenanced war, and her theologians have developed what is called the “just war” theory. According to some explanations of the theory, a war is to be considered “just” if it is:

- Declared by a legitimate authority (that is, a legal government)
- Fought for a just cause
- Fought with a right intention (that is, in pursuit of reconciliation and without unnecessarily destructive acts)
- Fought as a last resort
- Fought with a probability of success
- And if the damage to be inflicted is proportionate to the good results expected. The direct killing of noncombatants is also forbidden in a “just” war.

Many religious leaders feel that the nuclear bomb makes any “just war” theory out of date because of the awesome destruction a nuclear war would cause. But is it only now that this theory is called into question?

What about World War II, to mention just one example. During that war, religious leaders blessed both sides of the conflict. Yet surely both sides could not have been fighting for a just cause or with a right intention. Civilian centers such as London, Dresden and Tokyo were bombed, killing horrific numbers of

innocent noncombatants. Yet the religious leaders continued to support the war.

The truth is, Christendom’s leaders have always been ready to call a war “just” if it was waged by the country they happened to live in, even if it resulted in members of their flock fighting and killing fellow religionists of other nations. In this they have shown not the spirit of Christ but one like that of the American patriot Stephen Decatur, who is famous for his declaration: “Our country, right or wrong!”

accepting that conventional war is O.K. and nuclear war isn't. For the first time in history, because of the power of nuclear weapons, those who make the decisions to get involved in war are equally at risk with the young people who traditionally are sent off to execute the elders' decisions. So the churches and all the other decision-makers' wine cellars, material wealth and other holdings are no longer immune in the event of a nuclear war. We're all in it together."

Perhaps the comments of columnist James Reston have a bearing. He said: "The church is sustaining the peace movement, and the movement is giving new strength and purpose to the church *in its struggle for a voice in the secular world.*" (Italics ours.) Could it be that the bishops are trying also to regain lost influence and prestige by becoming leaders in the increasingly popular anti-nuclear movement?

We have to raise another question:

What Difference Will It Make?

"As a teaching document the [U.S.] bishops' letter is designed to exert moral influence on the issue of war and peace." So said theologian Richard B. Miller in the magazine *Bulletin of the Atomic Scientists*. Yet how much "moral influence" will religious leaders really have?

Will the leaders of the U.S.S.R. listen to the bishops' warnings? Or is it likely that the United States will suddenly change course? Why, even while the Catholic bishops were in the process of preparing their letter, the administration reportedly tried to persuade them to bring it more in line with government policies!

And what of those who make their living from nuclear weapons? Well, the U.S. bishops left it open for those who

work at producing them to keep on doing so if they wished. And they failed to encourage those in the military to refuse to be trained in the use of nuclear weaponry. So most of those involved in the production and use of nuclear weapons will most likely find reasons to carry on as before.

The Things They Forgot

The truth is, the bishops have come up with the wrong answer to the wrong question. The nuclear arms race is only a *symptom*. The real *disease* afflicting the human race is far deeper. Even if the bishops are somehow able to persuade politicians to remove the nuclear threat, other dangers will take its place unless the *basic* problem is handled.

A statement by the apostle John shows how much more complicated the problem is than most people think. He said: "The whole world is lying in the power of the wicked one." (1 John 5:19) Thus, there are *invisible* personalities involved, including Satan the Devil who in the Bible is called "the god of this system of things."—2 Corinthians 4:4.

True, many today do not believe in Satan. But surely the bishops do. And they must know that, according to the Bible, Satan has used the rebelliousness of mankind to further his own ends, like a master chess player manipulating pieces on a chessboard. For humans to try to bring lasting peace to the world by political means is like the pawns in a game of chess trying to make peace with one another while ignoring the shadowy figure of the chess player hovering over them. Satan is behind much of what happens on earth today, and any proposed solution that does not take him into account is bound to fail.—Revelation 12:12.

What about the comment, 'The de-

structive potential of the nuclear powers threatens the created order itself? While men may have the *power* to wreak great havoc on this earth, do the bishops think they will? Have they forgotten that God prophesied through the apostle John that He would "bring to ruin those ruining the earth"?—Revelation 11:18.

Yes, nearly 2,000 years ago God fore-saw that man would get to be in a position to ruin the earth, and said that He would not permit it. Rather, we are promised: "He has founded the earth upon its established places; it will not be made to totter to time indefinite, or forever." —Psalm 104:5.

The Real Problem—And Its Solution

The U.S. bishops, in the second draft of their letter, spoke of "a world of sovereign states, devoid of central authority." Here they are getting close to the real problem—and its solution! It is a question of government.

Think of all the hardships mankind experiences because of being ruled by selfish, nationalistic governments, all "lying in the power of the wicked one." (1 John 5:19) Certainly, if mankind were united under one government that was lying in the power of the Righteous One, Jehovah God, there would be no threat of nuclear destruction, and many other problems would be solved too.

Could that ever happen? In words that most schoolchildren know by heart, Jesus said it could, when he taught us to pray: "Your *kingdom* come, your will be done, on earth as in heaven." (Matthew 6:10, *The Jerusalem Bible*) Religious leaders sometimes speak about the Kingdom of God. But usually they fail to explain that God's Kingdom is a real government with real authority and that it is in operation

now. Soon it will act decisively toward the governments of this earth. "In the days of those kings the God of heaven will set up a kingdom that will never be brought to ruin. . . . It will crush and put an end to all these kingdoms, and it itself will stand to times indefinite." —Daniel 2:44.

God has the power to stop the activities of Satan, and he will do this through his Kingdom. (Revelation 20:1-3) Moreover, he has the power to stop the insane activities of the nations. He can and will "render judgment among many peoples, and set matters straight respecting mighty nations far away." (Micah 4:3) Will he remove the nuclear threat? Yes, and even the threat of war itself. "He is making wars to cease to the extremity of the earth. The bow he breaks apart and does cut the spear in pieces; the [war] wagons he burns in the fire."—Psalm 46:9.

Those murderous fireballs that rose above Hiroshima and Nagasaki in August 1945 reminded us as nothing ever did before of mankind's need for God's Kingdom. Whether any more nuclear weapons will be dropped in anger, we cannot say. But we do know that God will *not* allow man to destroy the earth. He will *not* allow the human race to be wiped out, and he will *not* allow the nations to continue terrorizing mankind forever.

—Isaiah 45:18.

Is God's Kingdom a realistic hope? The bishops evidently do not think so, since they offer political solutions. Nevertheless, we invite you to investigate the matter for yourself and see what you can do now in a practical way to work in harmony with the only real solution.

Only God has the power to save us from this dangerous situation. He has announced his purpose to do so.

Why Should I Read the Bible?

THIS is a reasonable question. One might answer by asking in return: Why does a person read *any* book? Most probably, either to be entertained or to be informed, or possibly for both reasons. This can be equally true when reading the Bible.

"Great literature" is entertaining, and the Bible is sometimes placed in this category. A person interested in literary entertainment can find it by reading the works of reputable writers—and even more so by turning to what is commonly known as the Book of books.

Besides, reading stories about people is usually fascinating. The Bible contains many. Furthermore, its personal

accounts offer valuable and practical information on how to live lives that will be meaningful and happy.

The Bible also serves to inform. As the world's oldest history book, it tells us about our ancient forefathers, their habits, customs and religious beliefs. It provides information about events that have affected all of us.

But is the Bible accurate? Once again, one might answer by asking: How does a person determine the accuracy of *any* book? First of all, by finding out exactly what it says. Only then can a person determine whether it has the ring of truth, and only then can he draw his own conclusions, not relying upon the opinions

THAT AMAZING BOOK CALLED THE BIBLE

What other book

- was written by some 40 men from several countries on three different continents in three languages over a period of 1,600 years?
- has inspired some of the world's greatest art, literature, music and architecture, while also having a profound influence on law?
- mentions scientific truths discovered and utilized by man only centuries later?
- contains hundreds of prophecies already fulfilled and a number of others now undergoing fulfillment?

**WOULD IT NOT BE WORTH WHILE
TO LEARN MORE ABOUT IT?**

HOW OTHERS HAVE FELT ABOUT THE BIBLE

"The Bible is worth all other books which have ever been printed."—*Patrick Henry*, American statesman

"I am convinced that the Bible becomes even more beautiful the more one understands it. Let culture and science go on advancing, and the mind progress as it may, it will never go beyond the elevation and moral culture of Christianity, as it glistens and shines forth in the Gospels."—*Johann Wolfgang von Goethe*, German writer

"I find more sure marks of authenticity in the Bible than in any profane history whatever."—*Sir Isaac Newton*, British scientist

"... probably the most influential collection of books in human history. Whatever one may think of the Bible's contents, its role in the development of western culture and in the evolution of many eastern cultures makes at least some acquaintance with its literature and history an indispensable mark of the educated man."—*The Encyclopaedia Britannica*

"It is the best book that ever was or will be in the world, because it teaches you the best lessons by which any human creature who tries to be truthful and faithful can possibly be guided."—*Charles Dickens*, English author

of others. But just how many people have read the entire Bible—all 66 books, 1,189 chapters, over 31,000 verses? Have you?

Do not let the size of the Bible frighten you. You need not try to read it all at once. Remember, it is not one big book. It is a collection of 66 small books. Just start anywhere—perhaps with the Gospels. Then discipline yourself into reading regularly. To help them do this, Jehovah's Witnesses, for example, have designed a program that includes reading a certain portion of the Bible each week and then discussing some of its highlights at one of their weekly meetings. You, too, would benefit from such a program of regular

Bible reading. It takes only a few minutes daily and might help you reach conclusions similar to those expressed in the accompanying box headed "How Others Have Felt About the Bible."

While concurring with such statements, Jehovah's Witnesses go even further. They consider the Bible to be the Creator's revelation of himself and his purposes to man. You may not agree. But if their claim is valid, just think how important it would be to read the Bible to find out what God has to say to *you!*

Perhaps you want to know how Jehovah's Witnesses have arrived at this conviction. If so, then obtain from them, or the publishers of this magazine, the

book *Is the Bible Really the Word of God?* and read it.

Getting the Most Benefit

Reading the Bible to gain general background knowledge or to enjoy "great literature" can be beneficial. But accepting its counsel and living according to its fine standards of conduct are of even greater benefit. Notice how the following excerpts from letters received by the publishers of this journal bear this out.

"I was so addicted to drugs that I was unable to satisfy my needs with the financial means at my disposal. So I had to get them some other way—a way that landed me in prison. . . . There I decided to learn more about the Bible, and later I even agreed to have a regular Bible study. This helped me forget my former way of life and freed me from many harmful practices."—W. G.

"Everything I learned [from reading the Bible] was logical and clear. I got information about problems that for some time had weighed heavily upon me. My mind's vacuum was filled with beneficial

thoughts. The Bible taught me the purpose of life and how to change my way of thinking."—R. K.

"I thought either there is a God or there is none. Should there be none, then I could live my life my own way. But I wanted to avoid later regrets by making sure. I hoped that a study of the Bible might help me make the right decision." It evidently did, because this young lady said that at times "20 minutes spent studying the Bible in a parking lot" gave her "strength for an entire week." She concludes: "My life today is much richer, more satisfying and more balanced."

—I. K.

You may feel that the Bible is simply an entertaining book full of useful information and wise counsel. Or you may feel that it is a gift from God for man's guidance and enlightenment. In either case, you will benefit by reading it. We encourage you to do so. Perhaps your own experience then will prove to be the best answer to your question: Why should I read the Bible?

GETTING MORE BENEFIT FROM BIBLE READING

You may have started—perhaps repeatedly—only to stop again when you found that you were unable to understand everything you were reading. If so, the following suggestions may be of help:

1. Choose a reliable translation in modern-day language.
2. Keep a good dictionary handy and look up any unfamiliar words.
3. Check names of people and places in a Bible dictionary or atlas.
4. When reading, ask yourself: How does this apply to me? What can I personally learn from the material?
5. Meditate on what you read; better still, discuss it with others.

Many Bible readers have discovered that keeping these points in mind makes their Bible reading not only more informative but also more entertaining.

Young People Ask...

Why Worry About Grades?

GRADING is morally wrong, practically ineffective, and a major deterrent to learning." So concluded teacher James Bellanca after observing the "negative effect" grades had on his own children. Our previous issue zeroed in on just a few of such problems. But should grades therefore be brushed off as unimportant? Not at all. However, there are some difficulties to overcome.

"Guessing Was the Best Way"

One 17-year-old describes the tests one teacher gave as "just plain memorization. No thinking." Similar complaints are often heard about homework assignments. "They sometimes give really senseless homework, like making you draw pictures," says 14-year-old Les. "In our school," adds 17-year-old Heather, "you're in trouble if you're not artistic." In this connection even prominent educators, such as Dr. William Glasser, claim school often fails to teach youths how to *think, analyze* and *reason*. And it is, frankly, easier to grade students' ability to memorize than it is their ability to reason. One youth recalls: "[My teacher's] tests were concerned with small details and one could receive the same grade whether or not he studied. Guessing was the best way."

Guessing and last-minute memorizing may rack up points on a test. But how much does one really retain? And if

one hasn't really mastered a subject like math, what good will high grades be when one day a bit of math is needed to balance a checkbook? And worse yet, if one resorts to cheating—a disturbing 55 percent of youths polled in one survey confess to this—of what value at all are top grades on a report card?

Cultivating "Thinking Ability"

Of course, many teachers are aware of these problems and construct tests and homework assignments that are challenging and stimulating. But what if you find yourself in a class where guessing or memorizing seem the ways to success—where learning takes a backseat to grades? Realize that merely getting good grades is *not enough*. Make a goal of cultivating what Solomon called "thinking ability." (Proverbs 1:4) This is the knack of taking raw information and drawing sound, practical conclusions from it.

How do you develop it? Solomon says: "A wise person will listen and take in more instruction." (Proverbs 1:5) So *listen* to your teacher, even if he or she is not a thrilling orator. If possible, sit close to the front of the classroom. Ask questions. "Take in more instruction" by digging deeper into the subject, especially when it seems dull. Don't confine yourself to what will appear on some test.

Another way is to search for the practical *value* of what you are learning.

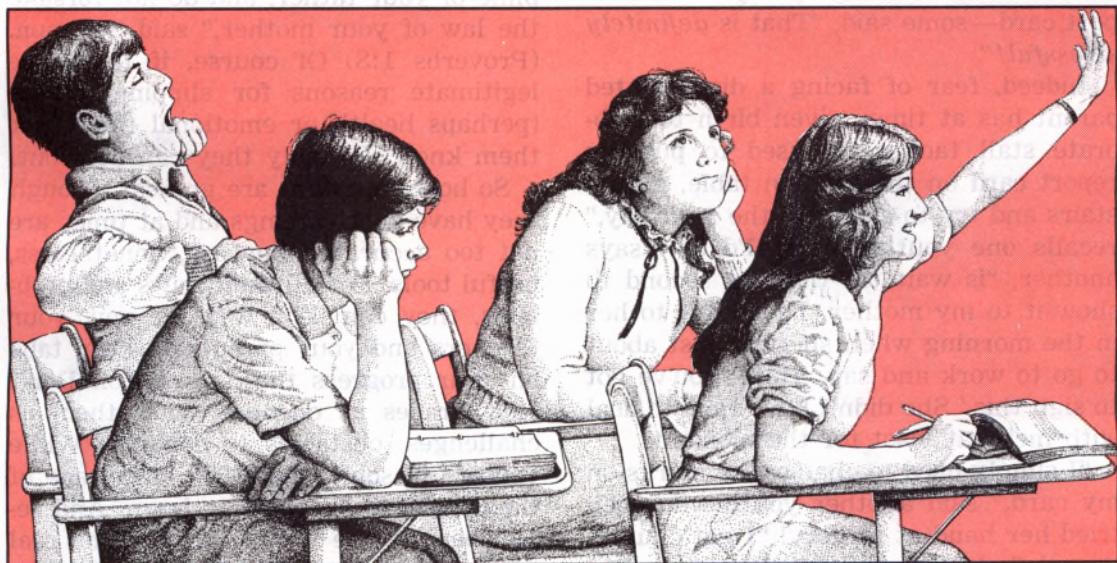
Here is where the God-fearing youth has a real advantage. For the Bible says: "The fear of Jehovah is the beginning of knowledge." (Proverbs 1:7) Suppose, for example, that you are in science class. Learning the laws of physics may seem pure drudgery. But the God-fearing youth wants to learn as much about his Creator as possible. He knows that through creation God's "invisible qualities are clearly seen." (Romans 1:20) Science class can therefore become an opportunity to gain further knowledge of Jehovah's creative wisdom!

What about history? A Christian is interested in history because it so often touches on the outworking of Jehovah's purposes. Seven major world powers (including the present Anglo-American combine) are discussed right in the Bible itself! (Revelation 17:10; Daniel, chapter 7) It is faith building to see how accurately these prophecies are fulfilled.

If you take an interest in school, it can actually contribute to the development of your "thinking ability."

Failure

Failing a grade—especially after trying hard to pass—can just devastate a youth's self-respect. Some, like Mr. Bellanca mentioned at the outset, have thus concluded that grades should be done away with. Educator Max Rafferty, though, argued: "As long as we live, we're graded on what we know, how well we get results . . . A school that kids the kids into thinking that life is going to be all Roman candles is not a school. It's a dream factory." Similarly, Paul Copperman charges in his book *The Literacy Hoax*: "Contemporary educators who reduce or eliminate standards out of concern for a child's self-esteem risk damaging the child far more seriously when they send him into the world poorly prepared to survive and function."



Listen, and ask questions—you'll get much more out of classroom discussions

A recent report on U.S. education entitled "A Nation at Risk" illustrates how many "poorly prepared" people there are just in the United States! "Some 23 million American adults are functionally illiterate by the simplest tests of everyday reading, writing, and comprehension," the report claimed. So while you may suffer the occasional humiliation of failing a test or bringing home a bad report card, don't forget that the pain of emerging from school uneducated or unprepared for life can be far worse. Rather than feeling sorry for yourself when you do poorly on a test, try to learn from your mistakes. You can even ask your teacher to help you correct your wrong answers.

"Definitely Stressful"

"None of the kids in our schools care whether they pass or fail," claimed one group of school-aged youths when asked if taking tests creates stress. But when asked about bringing home the results of such seeming apathy—a bad report card—some said, "That is *definitely stressful!*"

Indeed, fear of facing a disappointed parent has at times given birth to elaborate stall tactics. "I used to put my report card on the kitchen table, go upstairs and try to sleep till the next day," recalls one youth. "What I'd do," says another, "is wait till the last second to show it to my mother. I'd take it to her in the morning when she was just about to go to work and say, 'Here, you've got to sign this.' She didn't have time to deal with me"—at least for the moment.

"I simply used to change the marks on my card," said another youth who even tried her hand at forgery! "I got caught, though," she admits. "My teacher called my mother and said she hoped I'd do better next term. Mom said, 'But she got

an 85!' Then she realized I had changed the six to an eight."

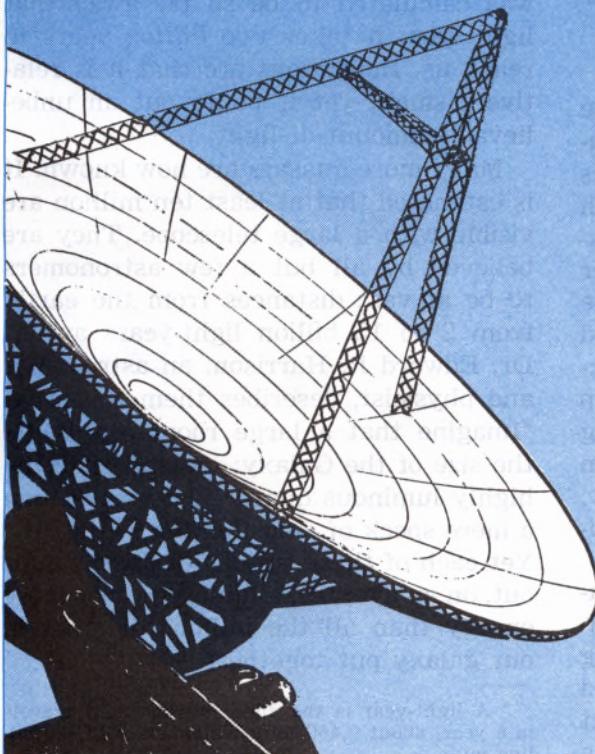
Grades obviously can mean the difference between war and peace with parents. Forgery or stall tactics, however, are wrong ways to keep peace. Your parents are rightly concerned about your progress in school. Understand that they want what is best for you and know how important it is that you do well in school. True, some parents may go a bit overboard in their demands. When this is the case, high-school teacher Barbara Mayer advises: "If you feel your folks are expecting more than you can honestly deliver, a little attempt at communication may go a long way." When your parents really know how you feel, they may be inclined to reconsider their position.

Usually, however, your parents simply want your grades to reflect your abilities. So when your grades are under par, you may need some encouragement—or discipline. "Listen, my son, to the discipline of your father, and do not forsake the law of your mother," said Solomon. (Proverbs 1:8) Of course, if there are legitimate reasons for slipping grades (perhaps health or emotional upset) let them know. Possibly they can help out.

So how important are grades? Though they have shortcomings and at times are not too accurate, they are, nonetheless, useful tools. For all their flaws and problems, they can be a way for you, your teachers and your parents to keep tabs on your progress through school. Don't view grades as enemies. View them as challenges, obstacles to conquer. While you are in school take full advantage of the opportunities there to learn. And remember, as one writer put it, "The real education in your life is going to take place in your head, not on your report card."

Looking Deeper Into The Heavens

By "Awake!" correspondent in Australia



HOW long has it been since you took more than just a casual glance at the stars at night? If you do so occasionally, you realize that you do not need binoculars or a telescope to be mentally stunned at the vastness, complexity and grandeur of it all. Almost 3,000 years ago, King David of Israel expressed what many of us sometimes feel. He wrote: "When I see your heavens, the works of your fingers, the moon and the stars that you have prepared, what is mortal man that you keep him in mind?"—Psalm 8: 3, 4.

David was talking about the stars visible to his unaided eye. But since the days of Galileo,

man's natural vision has been enhanced by the telescope, and he has learned how much more immense the heavens are than he suspected. He has learned that many of the twinkling stars he can see are in reality huge suns, some much bigger than our own sun. It is only distance that makes them look so small. He has learned also that throughout space there are billions of vast, rotating clusters of suns called galaxies.

The galaxy that our sun belongs to contains billions of other suns. Some galaxies are so huge that it takes light, travelling at nearly 300,000 kilometres (186,000 mi) each *second*, half a million years to travel from one end of a galaxy to the other. However, most other galaxies, despite their containing innumerable stars as bright or brighter than our sun, are too far away to be seen by the unaided eye.

Not a Star at All!

In recent decades the optical telescope has been supplemented by another instrument, the radio telescope, which tunes in to radio waves reaching the earth from outer space. Armed with this, astronomers have broadened even further our understanding of "the moon and the stars." On occasion they have discovered stellar bodies they never before knew existed. For example, in 1963, with the help of the radio telescope, astronomers using the Mount Palomar optical telescope in California, U.S.A., suddenly found a new, quite unexpected and absolutely incredible object in the heavens.

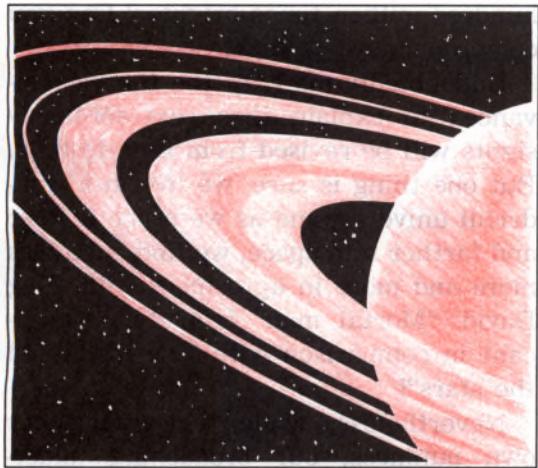
At that time, in the early 1960's, radio astronomy was just growing up. Although there were radio waves coming from sources in the sky, scientists had problems identifying accurately the exact source of the transmissions. In 1963 the

situation changed dramatically when it was predicted that a certain radio source from outer space might be blocked off temporarily as the moon passed in front of it. Since the position of the moon is clearly known, it should be possible to use this coincidence to determine exactly where that transmission was coming from. The observations were carried out successfully by the Parkes radio telescope in Australia, and the source of the radio waves was found to be a dim, bluish star.

This star was then examined more carefully, using the huge, 200-inch optical reflecting telescope at Mount Palomar. It was discovered, to everyone's surprise, that the object was not a star at all! Hence, it came to be called a quasar, short for "quasi-stellar radio source." It was calculated to be so far away that light from it takes two *billion* years to reach us. Indications are that it is relatively small, yet it pours out an unbelievable amount of light.

Many more quasars are now known. It is estimated that at least ten million are visible with a large telescope. They are believed by all but a few astronomers to be at vast distances from the earth, from 2 to 15 billion light-years away.* Dr. Edward R. Harrison, an astronomer and physicist, describes them this way: "Imagine that a large room represents the size of the Galaxy; on this scale the highly luminous quasar is no more than a mere speck of dust floating in the air." Yet each of these 'specks of dust' pumps out, on an average, a hundred times more energy than all the billions of stars in our galaxy put together!

* A light-year is the distance that light travels in a year, about 9,460 billion kilometres (5,880 billion mi).



Saturn still has the most beautiful set of rings in the solar system

What are these quasars? No one knows, but there are theories. Here is an intriguing one. The light from the most distant quasars takes 15 billion years to reach us. That means we see them as they were 15 billion years ago. No known quasar is farther than 15 billion light-years away; hence, they represent something that started happening 15 billion years ago.

According to the currently popular theory, the universe got started with a "big bang" about 18 to 20 billion years ago. Hence, quasars came into existence when the universe was "only" from 3 to 5 billion years old. According to the theory, that is about the time when galaxies would have started to form. Hence, quasars *may* be galaxies in the process of being born.

And Then the Pulsars

In 1967 astronomers were startled again when they discovered an object so bizarre that they thought it was some extraterrestrial intelligence trying to contact the earth.

Members of the Mullard Radio Astronomy Observatory at Cambridge, England, were carrying out routine surveys when a new kind of signal was noticed. It was a radio signal that flashed on and off, pulsated, in a regular rhythm. Radio astronomy, as you can imagine, is plagued by interference from local sources such as passing automobiles. Hence, at first, these strange signals were ignored. However, a more systematic examination showed that they were coming, not from traffic noise, but from outer space!

From where in outer space? This time the sources seemed to be stars located *within* our galaxy. They came to be called pulsars because of their strange, pulsating light and radio emissions. However, pulsars are not like ordinary stars. To emit their distinctive signals they must be rotating, rather like a lighthouse beacon. And since they pulsate every second or so—there is one that pulsates 30 times each second—they must be very small and spinning like a top. Astronomers now believe that pulsars may be only 24 kilometres (15 mi) across, but so dense that a cubic inch would weigh millions of tons. They also feel they must be very hot and have a huge gravitational field. Strange objects indeed!

Our Near Neighbors

The past few decades have seen some startling changes in our understanding of some of our closer neighbors too. As you know, our earth is only one of at least nine planets orbiting the sun. Robot spaceships have travelled through the emptiness of space, passed by the other planets and sent back pictures. Our neighbors turned out to be awe inspiring but not inviting.

Venus is a searing world permanently surrounded by clouds of sulfuric acid

with surface temperatures higher than molten lead. Mars is a cold, lifeless world, with not a trace of the fabled Martians. Jupiter seems to be mainly a ball of gas. It radiates energy (but not enough to qualify as a sun) and is surrounded by a miniature solar system of 16 moons. Saturn, the next in line, lost its distinction of being the only planet surrounded by a ring system when rings were detected around Jupiter and Uranus too. But Saturn's rings are still incomparably the most beautiful.

In 1979 the *Voyager I* spaceship discovered that active volcanoes are not confined to the earth. As the small spacecraft passed by Io, a large moon of Jupiter, it photographed a volcano in the act of erupting. It was further found that earth's highest mountain, Everest, is not really in the big leagues where big mountains are concerned. Olympus Mons, for example, a volcanic cone on Mars, rises 24,000 metres (80,000 ft) above the general surface level of the planet.

Unimaginable Numbers

It is impossible to consider the universe without using some very large numbers. Our own earth, for example, is about 12,900 kilometres (8,000 mi) in diameter. Compare that with the sun, which is 1,392,000 kilometres (865,000 mi) in diameter and could hold more than a million earths. The surface temperature of the sun is almost 6,000 degrees Celsius (11,000° F.), and at the core this is believed to rise in excess of 15,000,000 degrees Celsius (27,000,000° F.).

However, in comparison with a star examined in 1981 by the Explorer satellite, our sun is quite small. This hot, blue star, known only as R136a, is ten times hotter than our sun, 2,500 times more massive, one million times bigger and a

hundred million times brighter! Can you comprehend all of that?

Undoubtedly many of the theories advanced to explain these extraordinary sights will be revised from time to time. But one thing is sure, we live in a wonderful universe, and as we probe farther and farther into space, we find ourselves more and more in agreement with King David. "Mortal man" is truly insignificant in comparison with "the moon and the stars"!

Nevertheless, while underlining our own puniness, our broadening understanding of the heavens has served to deepen our appreciation of and wonder at Jehovah God, the dynamic source of all these marvels. The Bible extends the invitation: "Raise your eyes high up and see. Who has created these things? It is the One who is bringing forth the army of them even by number, all of whom he calls even by name. Due to the abundance of dynamic energy, he also being vigorous in power, not one of them is missing."—Isaiah 40:26.

In Our Next Issue

- *Will Nonviolence Ever Be a World Reality?*
 - *Educated, Employed, Useful—And Blind!*
 - *Will I Die in a Fireball?*
 - *Do You Spend More Than You Earn?*
-

LOVE YOUR ENEMIES and pray for those who persecute you, so that you may be children of [God] your [Mother and] Father who is in heaven." Does that rendering of Jesus' words surprise you? It was taken from *The Inclusive Language Lectionary*, a new translation of Bible selections published recently in the United States by the National Council of Churches.—Matthew 5:44, 45.

This is a translation with a difference. Its purpose, according to *The New York Times*, is to "eliminate the male-dominated language and imagery prevalent in earlier translations of the Bible." Why? "If the language of the Scriptures is exclusively masculine, women feel left out," said theology professor Dr. Susan B. Thistlethwaite, according to the *Times*.

Thus, God's "only-begotten Son" becomes "God's only Child." The word "God" is repeated, rather than using the pronoun "he." Similarly, the "Son of man" becomes "the Human One." (John 3:13, 16) And Jesus, rather than healing a "man," heals a "person blind from birth."—John 9:1.

Perhaps the most startling change, however, is in the references to God as "Mother and Father," as in the quotation in the introduction. Why should God be addressed in this way? According to the *Times*, the reasoning is: "Using 'father' as a metaphor for God ascribes to God a sexual identity not supported by close study of the Scriptures. They also say it fosters a male-oriented theology." Does that make sense?

Well, it must be said that God is *not* a man in the human sense of the word, although, surely, to call him "Mother and Father" introduces the idea of a double sexual identity. As for Jesus when he was on earth, he certainly *was* a man. That fact is not changed by avoiding speaking of him as "he." However, when he returned

to heaven he, too, was no longer a man in the human sense.—1 Corinthians 15:50; 1 Peter 3:18.

Nevertheless, the original Bible writers invariably referred to God as "he." He is almost always spoken of in male terminology, such as "Our Father." (Matthew 6:9)

Jesus, too, both while on earth and when in heaven, is referred to as "he" and often appears in a man's role, such as the husband of his congregation, and the "Prince [not "princess"] of Peace."—Isaiah 9:6; 2 Corinthians 11:2.

The apostle Paul said: "All Scripture is inspired of God." (2 Timothy 3:16) Hence, God inspired the Bible to be written in this way. He *wanted* to be referred to as "Our Father," not "Our Mother and Father." Surely, a translator has no authority to conceal this to cater to 20th-century prejudices.

Does the Bible contain a "male-oriented theology"? Not really. Rather, a careful study of the Bible reveals an impartial arrangement for salvation where women are certainly not "left out." Paul said that in the body of Christ, for example, "there is neither Jew nor Greek, there is neither slave nor freeman, there is neither male nor female."—Galatians 3:28.

True, the Bible does assign headship to the man over the woman, especially in the congregation and in the family. (1 Corinthians 11:3) Some modernists may dislike this teaching, but it is part of the inspired Word of God. Rather than trying to nullify it by changing the Bible, should not sincere Christian men and women study the headship principle closely to learn how to apply it to the benefit of both, following the perfect example of Jesus? In this way they will avoid the serious crime of changing the Word of God. (Revelation 22:18, 19) And they will allow God's wisdom, not human wisdom, to guide them.
—1 Corinthians 2:6; 3:19.

GOD —Our Father AND MOTHER?



Did You 'Put Your Face On' Today?

Behind the Cosmetics Counter—Through a Woman's Eyes

IF SO, that beautiful image that smiled back at you in the mirror was probably a creation of beeswax, castor oil, shellac, and the corpses of female insects similar to mealybugs!

An exotic creature? Perhaps. For the most part, though, this is an average woman who has just finished putting on her makeup—her "face"—and, as a result, is ready to meet the world!

"I just don't feel dressed without my lipstick on" is a sentiment of many women who feel that cosmetics are as important as wearing clothes. But why are they so necessary to some women, yet needless to others? Does makeup help or hinder

the ultimate goal of beauty? Can you believe all the ads you read, and if not, how do you decipher fact from fiction? Let's explore this subject so fascinating (and sometimes frustrating) to millions of women.

Advertising Is the Name of the Game

Throughout history, the attitudes toward cosmetics and their propriety varied largely according to the whims of the current ruler or government. Makeup continued on or off the face until around World War I, after which the cosmetics industry—as big business—was born. From a gross income of nearly \$40 mil-

lion in 1914 to over \$13 billion (U.S.) in 1982, the cosmetics industry can credit much of its phenomenal growth to advertising.

A beautiful woman coos across the TV screen, "It's expensive, but I'm worth it." The saleswoman asks, "You'll take the gel, ma'am? Well, it doesn't work without the balm. You must apply one in the morning and one at night." Product X "works . . . within the epidermis to accelerate natural skin renewal . . . The skin looks . . . more youthful," promises the brochure.

Let's examine what you were sold. In the first instance you paid extra for the item but "bought" the underlying ego soother "be-good-to-yourself." In the second case you sought one product you wanted, but purchased the "complete line" since 'one won't work without the other.' And finally, since cell renewal accelerates to repair injured or damaged skin, your third purchase, as explained by *Money* magazine, "induces an invisible and harmless inflammatory reaction that boosts production of new cells. Although the new cells on the stratum corneum [top layer of skin] may be young and fresh, that old sagging dermis is still underneath, folding and wrinkling away." You bought hope, not substance, at \$39.50 an ounce.

Another powerful means of advertising comes from women's magazines. "From a very early age, women's normal insecurities are heightened tremendously" by the prepackaged perfection that women's magazines portray," says Ellen McCracken, Ph.D., and researcher into the effect of women's magazines. Just how much advertising is done? According to *Advertising Age*, McCracken says that "the women's magazines always start the list."

In one issue alone there were 610 pages of advertising, or 76 percent of the entire magazine! "If you count what's hidden in the editorial matter, close to 95 percent of the magazine becomes ads," she says. What price, these advertisements?

What difference between the 99c tube of lipstick and the \$7.50 tube? "Basically similar," says a government agency

One back-cover ad sold for \$99,000 each month. That's a lot of lipstick!

Does Higher Price Mean Higher Quality?

Is there a difference between the supermarket's 99c tube of lipstick and the department store's \$7.50 tube? Depends on whom you ask. Yes, say the giant cosmetic companies; no, answer the low-priced manufacturers. The budget-priced companies claim the price differences are in the packaging and marketing, whereas the major cosmetic companies cite research and development for new products, more variety in shades and colors, and greater advertising costs as the reasons for their bigger price tags.

As stated by Margaret Morrison, a staff writer for the FDA (Food and Drug Administration Office of Public Affairs): "Although ads for cosmetics sometimes hint of magical ingredients, chemical analyses show that the products in any category—lipsticks, face creams, deodorants—are basically similar in composition."

Interestingly, often cosmetics companies consign the manufacture of their products to the same outside factory and

then do the marketing themselves, which means that only the names and packaging have been changed, since many competing cosmetics are identical. This practice will not hurt your health, just your pocketbook.

Undefined Definitions

Be on guard, for many terms used in the promotion and labeling of cosmetics are not well defined. One ad may claim that the product is a "rich emollient." Rich in what? Or what about "medicated" cosmetics? There is no legal definition for "medicated," and at present it means anything the manufacturer wishes. And what of those "deep-cleaning" products?

The Medically Based No-Nonsense Beauty Book answers: "There is absolutely no substance available that reaches down into plugged pores and cleans them out. Don't believe any ad that claims this feat for its product." The FDA suggests you take such terms "with a grain of salt."

What about hypoallergenic cosmetics? The prefix "hypo" means "less," so hypoallergenic simply means *less* allergenic. *Consumers' Research Magazine* reported the FDA as saying: "There is now no regulation specifically defining or governing the use of 'hypoallergenic' or similar terms. Consumers concerned about allergic reactions from cosmetics should understand one basic fact: There is no such thing as a 'nonallergenic' cosmetic—that is, a cosmetic that can be guaranteed never to produce an allergic reaction."

Other terms are carefully chosen for truth of advertising. According to *Money* magazine, you may see such terms as line "smoother" or wrinkle "prevention," but you will not see wrinkle "removers." Products containing a sunscreen have an ultraviolet-absorbing chemical that can

help "prevent" premature wrinkles due to sun exposure. Existing wrinkles can be 'smoothed' out—made less noticeable—by creams containing petrolatum or collagen. Petrolatum coats the skin so that reflection from light makes small creases less obvious. Collagen will do the same and, when it dries on the skin's surface, tightens the skin and temporarily "smooths out" wrinkles—and that is all. Other creams claim to work by plumping up the skin cells, leaving a smoother appearance. So whether you opt to prevent, plump, or polish those wrinkles, the only legitimate wrinkle "remover" is a plastic surgeon!

How Safe Are Those Lips, Lines and Lashes?

The FDA controls the safety of cosmetics, including ingredients, packaging, facilities and proper labeling. As defined by the U.S. Food, Drug, and Cosmetic Act of 1938, cosmetics are "for cleansing, beautifying, promoting attractiveness." Since cosmetics are solely for improving one's looks, the FDA considers them a drug only if they alter a body function. Lipstick is regarded as a cosmetic; antiperspirants are classified as drugs, since manufacturers claim that they block perspiration, or alter a natural body function. Drugs are regulated more strictly than cosmetics.

According to a booklet put out by the FDA, "with the exception of color additives [which must be tested for safety and purity], a cosmetic manufacturer may, on his own responsibility, use essentially any ingredient or market any cosmetic until FDA can demonstrate that it may be harmful to consumers under customary conditions of use." The agency further states: "Therefore, we cannot say that any cosmetic is absolutely safe, because

we have not been provided safety data on all of the individual ingredients, or on the finished product."

But if a cosmetic manufacturer does not substantiate the safety of his products, he is required by law to put a warning on the label, reading: "WARNING—The safety of this product has not been determined." Many cosmetic companies, however, voluntarily supply formulas and safety data because they want to offer a good product, and because it is good business.

It is a law that all ingredients be listed on cosmetics in descending order of proportion. The reasons being (1) the consumer has a right to know what is being purchased and (2) this requirement will promote truth in advertising. One advantage of this law is that it enables the consumer to determine more readily the cause of an allergic reaction. Another advantage is that it allows for price-compare shopping. And the consum-

er can become familiar with ingredients so as to purchase a good product, not just a good ad. This listing does not, however, include individual fragrances, cosmetic flavors or any ingredients that the FDA accepts as the manufacturer's trade secrets.

When the cosmetic ingredients are tested for safety, how is this done? The Humane Society of the United States says that "every year, between 60 and 100 million animals are used in biomedical programs," including cosmetics testing. The Draize test is used "to determine the *eye irritancy* of substances. Drops of soap, perfume, and other common products are put into the eyes of albino rabbits to find out if these things are harmful to human eyes." Suggested alternatives to this painful type of testing are tissue cultures, computer models and bacteria. *Discover* magazine says that many scientists feel that "the number of animal experiments eventually can be cut to a fraction of its

Cosmetic Safety Tips

1. All makeup can harbor harmful bacteria, so replenish your supply every four months or so.
2. When you buy a new mascara, *always* discard the old brush.
3. Wash your hands before applying any makeup.
4. If the makeup calls for water, use water—not saliva.
5. Clean your brushes and makeup tools once a week.
6. Keep eye pencils sharpened to remove bacteria. Clean pencil sharpeners with a cotton swab dipped in alcohol.
7. Keep containers tightly closed to help prevent contamination or decomposition of the product.
8. Do not share cosmetics; they may be contaminated.
9. Do not use cosmetics on irritated or injured skin.
10. Keep cosmetics away from children.
11. When an adverse reaction occurs, discontinue using the product. If the problem persists, see a physician, giving him the cosmetic container, labeling and directions that came with it.
12. Report to the manufacturer or distributor shown on the label, and to the nearest FDA office, any adverse cosmetic reaction.

present size, and that the computer may some day be an excellent substitute for those tests, like the Draize, that do not involve matters of life and death."

Maquillage or Masquerade?

When asked why she wore makeup, one woman replied that without it she looked like "Death." Another felt: "Until I have my eyes on, I am invisible. People say: 'There goes that nice woman with no face.'" Still others feel as this woman does: "I hate makeup. It gives me the creeps—everything turns green on me."

Whether one chooses to wear makeup or not is, of course, a personal decision. For those who do wear it, remembering the definition of cosmetics helps, namely: For "beautifying, promoting attractiveness." Do you want to be remembered as the lovely girl with the pretty blue eyes or as the girl with the blue eye shadow?

Or what of the situation where the husband leaned over to his wife, whispering: "Why has that woman done that to her face?" The woman had brown streaks smeared under the cheeks and along the sides of her nose. She had whitish-pink stripes along her cheek and brow bones. The cheeks were hot pink, the lashes laden with globs of mascara, and a purply gloss covered her blackish pencil-lined lips. "She's got contour make-

up on," the wife answered, recognizing that the woman had faithfully followed the models' step-by-step procedures for slimming a nose, widening the eyes, and so forth. But what did the end result appear as—a maquillage (makeup) or a masquerade (disguise)?

A feminine woman is charming, gracious. If she does not wear makeup, she is confident without it. If she does wear makeup, she is confident because she wears it with dignity—adding just a touch of definition, a hint of color to enhance her natural features. Just as her speech and clothing make a statement about her, so, too, her makeup. Is the statement kind, gentle, dignified strength; or is it harsh, brash, overpowering? Never should one see the makeup rather than the person. If so, then the only "promoting" being done was smart advertising and not attractiveness.

For you curious, the lovely lady mentioned at the outset of this article was wearing lipstick (castor oil and beeswax), mascara (shellac), and eyeshadow (carmine N.F.—derived from the dried bodies of female cochineal, a bright-red bug akin to mealbugs).

So whether you decide to 'put your face on' or wear it au naturel, put on a happy one and smile!

What God's Word Says About Adornment and Charm

"I also want the women to be modest and sensible about their clothes and to dress properly."—1 Timothy 2:9*

"Your beauty should consist of your true inner self, the ageless beauty of a gentle and quiet spirit, which is of the greatest value in God's sight."—1 Peter 3:4*

"Charm is deceptive and beauty disappears, but a woman who honors the LORD should be praised."—Proverbs 31:30*

* Today's English Version

Flying "Blind"

-How Do They Do It?

We were flying from Paris to Rotterdam. The weather was very bad. I prepared to make an instrument landing. When my nervous passenger-friend in the copilot's seat heard the landing gear go down, he asked with concern, "Can you see the runway?"

"It's down there on the left," I calmly replied. He had no reason to be nervous.

SOME TIME later, I was spending an evening with this friend back in France when suddenly he said: "You've got absolutely incredible eyesight!" Noting my surprised silence, he continued: "When we landed in Rotterdam, you spotted the runway *ages* before I did. I couldn't see it until just before we landed."

"Really, my eyesight is not so exceptional," I said. "Radio instruments, in effect, replace my eyes. Thanks to them I am able to 'see' the airport even when visibility is zero."

"But how is that possible?" he asked. It dawned on me just how mysterious an aircraft's array of buttons and dials must seem to the average person. And no doubt many commercial flight passengers feel a twinge of panic as they see their plane descend toward a seemingly invisible runway!

"Seeing" by Radio

"First of all, remember that flying is not all done by sight. True, a pilot can and does use landmarks and maps to guide him, but he also depends on his radio. Often it's not practical to follow a route visually. So along the way there are radio stations that beam out a special signal; each has its own particular fre-

quency and identification code. On board, the pilot receives these signals on his ADF (Automatic Direction Finder) or radio compass."

"How does that work?"

"The old radio compass was simply a radio receiver with a rotating loop-type antenna. This type of antenna gets the best signal when the edge of the loop points toward the transmitter. But the signal weakens when the loop faces the station. Thus a pilot could determine the direction of the transmitter."

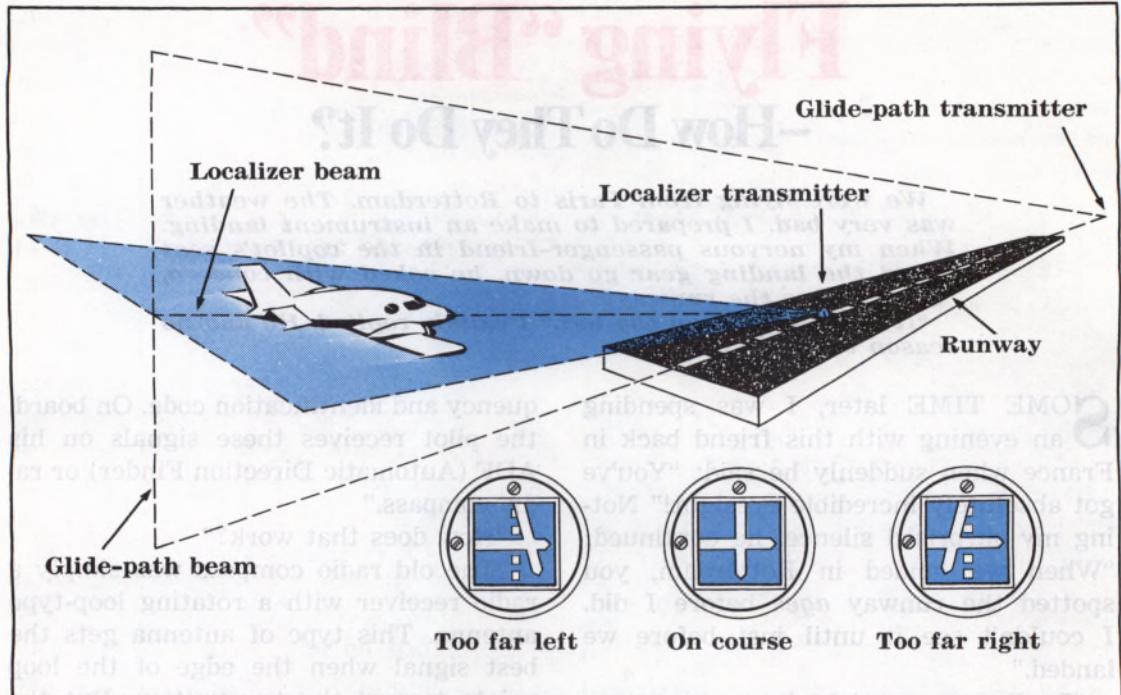
"Was this like swiveling a transistor radio and having the music get louder or softer?"

"Yes, it basically followed the same principle."

"But how could you tell if the transmitter was behind the aircraft or in front of it?" my friend asked. "When you turn a radio 180 degrees, you get exactly the same reception."

"That used to be a problem," I admitted. "In times past we therefore had to take two consecutive measurements to get our bearings. Nowadays the ADF has an electronic circuit that solves this problem. And once you've tuned to a station an indicator dial on the pilot's control panel constantly points toward the transmitter."

"Do you mean that if your plane was



heading directly toward a transmitting station, the needle would point straight ahead?"

"Exactly!" My friend was beginning to catch on.

"Well, could the pilot just tune into any land-based transmitter like an AM music station?"

"Yes. But radio stations are not always located where they are useful for navigation. So special transmitters are set up in strategic locations and at airport approaches. It's really very simple to follow any flight path because of these beacons. Once a pilot identifies the station he's tuned to (remember, each station has its identification code) he can, with the aid of a chart, easily 'see' where he is and plot his course."

"Of course," I continued, "no system is perfect. While these beacons have a long range, even for low-flying aircraft, they

do pick up interference—like lightning." (Indeed, it could even lure an inexperienced pilot right into a thunderstorm! But this is unlikely.)

"Why don't they use FM broadcast bands, then? They are not affected by storms, are they?"

"No, they aren't. But the high frequencies generally used for FM transmissions have very limited range and do not work when there is an obstacle between transmitter and receiver."

Fortunately, there are other systems. I next told my friend about the VDF (Very-High Frequency Direction Finder).

"The difference with this system," I explained, "is that the pilot does the transmitting and the air-traffic controller at the airport receives the signal."

"Does he have a receiver with the same sort of dial as the one in your plane cockpit?"

"He used to, but nowadays information is given by digital readout. Also, the air controller only guides the pilot when he is requested to do so. The controller does, nevertheless, regularly check the aircraft's direction as a security measure."

"Does this system have any drawbacks?"

"The primary disadvantage is that only a few planes can be handled at a time—and only one for landing. Also, the range is limited (about 160 miles, or 260 kilometers) and the plane must be high enough for there to be no obstacle between receiver and transmitter. So this system is used only for the airport approaches and landings."

"Has anything been found to overcome this weakness?"

"Yes. There is the VOR (Very-High-Frequency Omnidirectional Radio Range) system. It is immune to meteorological disturbances, it is accurate and it can be used by several aircraft at the same time. In this case, the transmitters are land based. The pilot tunes into the correct station and watches the needle of his 360-degree VOR indicator. When he's on course, the needle moves to the center. This instrument also shows the pilot if the plane is flying toward the beacon or away from it. And an OFF indication appears on the panel if the airplane is too far away or flying too low for satisfactory reception."

"But what can the pilot do if that happens?"

"Tune in to another beacon. That's really not difficult because each beacon has its own frequency and identity code."

When the Landing Strip Is Invisible

"Well, I think I've followed you up until now," my friend said. "But I still can't see how these instruments could be of

any use during the approach and landing if you can't even see the runway!"

"This is where the ILS (Instrument Landing System) comes into play. The pilot tunes his receiver to the proper frequencies. He wants to receive two radio beams emanating from the airstrip. They provide an 'electronic ramp' leading to the runway. The 'vertical localizer' beam lets him line his aircraft up with the runway right on center. At the same time, a second radio beam provides the proper angle of approach, at which the pilot should descend. To utilize these beams, he watches the vertical and horizontal indicator needles and flies so as to keep them centered. (See illustration.) Thus he flies on the correct course to the runway, even if he cannot see it. And just before he approaches the runway, three small ground transmitters send out a special signal. This tells the pilot exactly how far he is from the runway, just before touchdown. Of course, while it sounds simple, strong winds can send an aircraft off course, so it takes much skill and experience to fly a plane blind.

"Well, all of this defies imagination!" said my astounded friend.

"It is amazing," I replied. "And we have only discussed a few navigational instruments."

My friend had much to think about, and I gave him a little more: "But I'll tell you what really 'defies the imagination.' The fact that Jehovah God has already created communications systems that make man's equipment seem crude by comparison. Bees, fish, dolphins and many birds navigate with extraordinary precision—and without the aid of any of these instruments!" (See Job 12:7-9.)
—Contributed.

From Our Readers

CPR

Thanks to your article about a method of artificial respiration called CPR, or cardiopulmonary resuscitation (February 8, 1979), I was able to help another man save the life of a boy about seven years old who had drowned in a pool. I made the compressions on his chest, and although it took time for him to recover, he has improved and is already able to lead a normal life.

S. U. P., Spain

Job Interviews

Your article "Young People Ask . . . How Do I Handle a Job Interview?" (February 8, 1983) was especially helpful. Seventeen of us applied for two vacancies in a large firm here. After the first test, all were eliminated except four, and after the final interview, two of us were approved for the jobs. Both of us who got the jobs had read and put into practice the fine suggestions given in that magazine article!

N. W. and M. M., Brazil

Work a Pleasure?

Since at the moment I am in prison, I have a great deal of time to meditate. Several days ago I received your magazine with the fine article "Work Can Be a Pleasure—Is Yours?" (September 8, 1983) This article prompted me to reflect upon my past. My work used to be so important to me that I completely forgot my family. Arguments at home became more frequent, until one day divorce proceedings were started. Then my criminal activity began. Had I made contact with your publication

and Jehovah's Witnesses at that time, I certainly would have been spared many things. I would have had a completely different view of family life. Many a problem can be solved much more easily by sticking to the Bible.

G. S., Germany

Cocaine

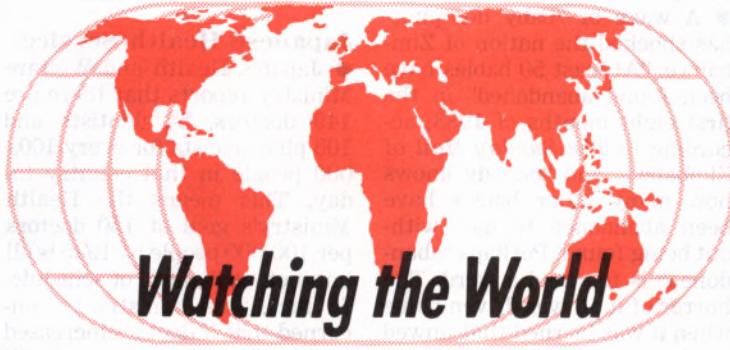
Thank you for your article on cocaine. (August 8, 1983) Not only did you write the truth about the harmful drug but you told people how to get off it. The majority of cocaine articles just tell you the harmful effects and leave you hanging. Most people know about the effects but just want to know how to stop. It is encouraging to see that there are those who give truthful answers, and who do not make people think one is just weak willed.

V. C., Illinois

Alcoholism

I am a doctor and for more than a year I have been working with the problem of alcoholism. One day a patient gave me a copy of your magazine with a series of articles on alcoholism (July 8, 1982), and I found it most interesting. I congratulate you for your efforts and I will do what I can to make known the work you are doing. Kindly send me any other issues dealing with this subject, especially the one dealing with "An Alcoholic in the Family—What Can You Do?" (December 8, 1982), as announced in the January 8, 1984, issue [Portuguese] that I have received.

H. U., Brazil



Bloodless Surgery

• A technique for open-heart surgery without blood transfusion, used initially only on Jehovah's Witnesses, has been performed successfully on almost a hundred youngsters at the Children's Hospital in Buffalo, New York, says an Associated Press report. "We felt if these [Witness] patients are doing so well," said the chief of cardiac surgery, "why don't we do it for other patients?" The technique involves lowering the infant's body temperature from the normal 98.6° F. (37° C.) to about 75° F. (24° C.), which reduces the blood flow to half its normal rate, lessening the blood loss. The infant's blood is also diluted with an equal or larger amount of a mineral-and-nutrient solution. The diluted blood, though having only about one third the normal oxygen-carrying capacity, is found to circulate better than undiluted blood and places less strain on the lungs and kidneys during surgery. Those findings were "something of a surprise" to the doctors.

Doomsday Nearer?

• The "doomsday clock," a feature of the *Bulletin of the Atom-*

ic Scientists, was advanced another minute last January to three minutes before midnight. The move was made at the advice of 47 prominent scientists, including 18 Nobel laureates, because of the stalled disarmament talks and the unabated arms race between the superpowers. "More ominous" than just the number of nuclear weapons stockpiled, says the magazine, is the "inclination of the leaders of the nuclear powers to talk and act as though they were prepared to use these weapons." The "Bulletin Clock" has been advanced and set back through the years to indicate the intensity of "the threat of nuclear doomsday hovering over humanity." The present move to three minutes before midnight is the closest in 30 years.

UN Budget

• While the effectiveness of the United Nations in keeping peace is apparently diminishing, its operating cost is not. The UN Secretariat has 16,000 workers, compared to 3,982 in 1948. Its annual budget now stands at about \$4 billion (U.S.). More than three quarters of it

goes toward paying the salaries of its nearly 50,000 employees around the world. Estimates are that for the next two years it will spend \$23.3 million in management and maintenance of its buildings, \$19 million for utilities and almost \$2 million for elevator operations. The organization will also spend \$10 million for printing operations and \$70 million in promotional efforts to enhance its image. The UN is funded by contributions from member nations, and taxpayers in the United States pay about one fourth of the total bill.

Moral Epidemic

• "Britain's declining sexual morals are threatening an epidemic of cancer in women," says Liverpool's *Daily Post*. The *British Medical Journal* reports that in the last 15 years there was a threefold to fourfold increase in indications of premalignant conditions in women under age 40. Researchers attribute it to the fact that "today's 'highly mobile' people are likely to have had several sexual partners." Commenting on the rapid increase of cervical cancer in "that section of the population who copy sexual mores portrayed so explicitly night after night on television," a gynecologist said: "You have cases of girls of 19 with positive smears who are dead by the mid-twenties." Each year more than 2,000 women die of cervical cancer in Britain.

Brazil's Waning Church

• "Brazil, the largest Catholic country of the world, is now a paradise for popular sects that grow in the same proportion in which the Catholic Church loses its faithful." That was a caption appearing in *O Estado de S. Paulo* in a series of ar-

ticles entitled "Empty Churches." There are fewer and fewer priests in churches that are always empty, says the paper. In contrast, Oriental philosophies, Pentecostal movements, voodooism and spiritism are all on the upsurge, with meeting places packed to overflowing. Pope John Paul II recently expressed concern about those who have left the church and appealed to the clergy and the laity alike to "show special interest" in such ones "so that once again they may have a vital part in the Church." The articles claimed that, among other things, political meddling and a lack of spirituality have disenchanted many.

Modern Stradivarius?

● For years, scientists have been trying to uncover the secrets that account for the beautiful tones of the violins made by 17th- and 18th-century Cremonese masters such as Stradivari and Guarneri. While scrutinizing a Guarneri cello, Joseph Nagyvary, a biochemist at Texas A & M University, discovered that the cell walls of its wood are punctuated with tiny openings that in ordinary dry wood are closed by a natural glue. "Open chambers will obviously resonate in a way that is different from closed ones," said Nagyvary. Then he realized that "the wood used in Cremona had floated down from the mountains to the sea, where it sat in a salt-water bay of the Adriatic." The salt water evidently dissolved the glue and opened up the air chambers of the cells. Using wood treated with a similar process in his lab, Nagyvary had four violins made. The result? He and other scientists and musicians are convinced that these violins are a close match of Cremonese in-

struments in tone and volume.

Baby Dumping

● A wave of "baby dumping" has shocked the nation of Zimbabwe. "At least 50 babies have been found abandoned" in the first eight months of 1983, according to *The Sunday Mail* of Zimbabwe, and "nobody knows how many other babies have been abandoned to die" without being found. Perhaps "abandoned" is too mild a word. The horror of it all was driven home when it was learned that unwed mothers were involved in "the burying of innocent infants in ant-hills, the dumping of bodies into streams or rivers, the mangling of newly-born flesh and the attempt to flush such remains down the toilet." The state has recommended remedies such as sex education in primary schools and more homes for unwed mothers, apparently to little avail.

City Face-Lift

● Apparently some of New York City's officials feel that the many burned-out and abandoned buildings in the city are too much of an embarrassment. So a program was launched to "improve the images of rundown neighborhoods" by covering the unsightly spots with about \$100,000 (U.S.) worth of "large vinyl decals depicting shutters, potted plants, Venetian blinds and window shades" to give them a "lived-in" look, reports *The New York Times*. Naturally, the question is: Why spend so much money on decals instead of on improving the buildings? Until sufficient funds to rebuild such neighborhoods can be located, says the mayor, this is the city's way to show "we do care." But the *Times* retorts: The investment "would symbolize not Govern-

ment's interest in struggling neighborhoods but its desire to hide unpleasant realities."

Japanese Health Service

● Japan's Health and Welfare Ministry reports that there are 149 doctors, 54 dentists and 105 pharmacists for every 100,000 people in that country today. This means the Health Ministry's goal of 150 doctors per 100,000 people by 1985 is all but met, well ahead of schedule. In fact, "the ministry is concerned that if doctors increased at the current rate, there will be a surplus of doctors soon," says the *Asahi Evening News*. In spite of this, studies in seven major cities and rural areas show that city people are facing increasing risk of death due to bowel and breast cancer, and in the rurals, death due to cancer of the gallbladder is on the rise. The 1982 population statistics released by the Ministry show that cancer accounted for nearly one fourth of all deaths in Japan.

Did the Birds Know?

● Much publicity was given to the collapse of a 100-foot (30-m) section of the Mianus River bridge in Connecticut in 1983. *The New York Times* states that in 1978 it was estimated that 52,000 starlings were roosting beneath the bridge. In 1979 there were only 12,000 roosting under it. In 1980 the number had dropped to six and since then none were to be found there. So the question is: What did the starlings know? The Audubon people commented that they "don't interview birds; they only count them."

Robots Are Here

● More than 30,000 industrial robots are already in use worldwide, says *The German Tribune*,

and the number can swell to 300,000 by 1990. About 60 percent of them are in the United States and Japan. Germany has about 11 percent of the total and is catching up fast. So far, robots are used mainly in the auto industry. At Volkswagen, for example, "robots have been doing between 14 and 25 percent of production work," and the figure is expected to increase to 60 percent. The modern breed of robots is said to be "increasingly dexterous and intelligent." With TV cameras as eyes, they can recognize specific objects and adapt to new jobs. The technology is developing so fast that what was considered a breakthrough just two years ago is now out of date.

Pain-Detection Tool

● For years, a real dilemma for legal and medical experts has been determining the veracity of personal-injury claims. Is the victim really in great pain, or is he feigning it so as to get a large monetary settlement? A new method of pain detection—thermography—may be the answer. "The technique uses infrared sensors to make a multi-colored picture of temperature variations on the skin," says a report in *The Globe and Mail* of Canada. Pain in soft tissue, which cannot be detected by X ray, will show up in the infrared picture because of temperature differences due to muscle spasms or constriction of blood vessels. Courts in several states in the Unit-

ed States have accepted thermograms as evidence, and the Supreme Court of Ontario has recently done so. Thus, thermography may be a blessing to the honest sufferer and help to expose the malingerer.

Powerful Mosquito Killer

● Scientists believe they have developed "a new weapon capable of wiping out legions [of mosquitoes] within minutes," reports the *San Francisco Chronicle*. It is a larvicide, not a chemical derivative, that "is neither carcinogenic nor harmful to surrounding plant and animal life," states the report. So far it seems to be "poisonous only to the larvae of mosquito and a couple of other pests." Entomologists conclude that it is "extremely effective."

of studies prove something else—
molecules as viruses may life
according to a process to
the point of life and go to
expose the influence.

Powerful Medicine **Healer**
• **Sesame-Peppermint** **Healer**
healed "a woman who
was unable to walk out before
the "miracle". Heals the "miracle" **Healer**
before returning home by
himself. "A person who has
been to the "miracle" **Healer**
will be able to offer "miracles".
"Extremely effective",

Pain-Relief Tool
• **Pot Herbs** A good herb
helps any medical experts
know determining the disease
of person-injury. This is
when there is no time to rest
and healing it is as if a
visiting angel. **Avalanche**
is also known as "Avalanche
for example". Roots have been
good medicine in the last 20 years.
However, "the people near us
have started to use a little
coconut oil because it smells
beautiful on the skin", says a
woman in the **Coconut Oil** **Healer**
to **Cubans**. Pain in soft fat
and water cannot be helped
but the **Healer** **Healer** **Healer**
to stimulate different parts
of human body to cure
from blood vessels. **Coconut**
oil several times in the **Healer**

and the number our soul to
300,000 by 1980. About 80 per-
cent of them are in the United
States and Japan. **Quinine** has
been used since the 1700s to
stop the fever in the **Healer**
who had malaria. **Almond**,
nut example, "roots have been
good medicine in the last 20 years.
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