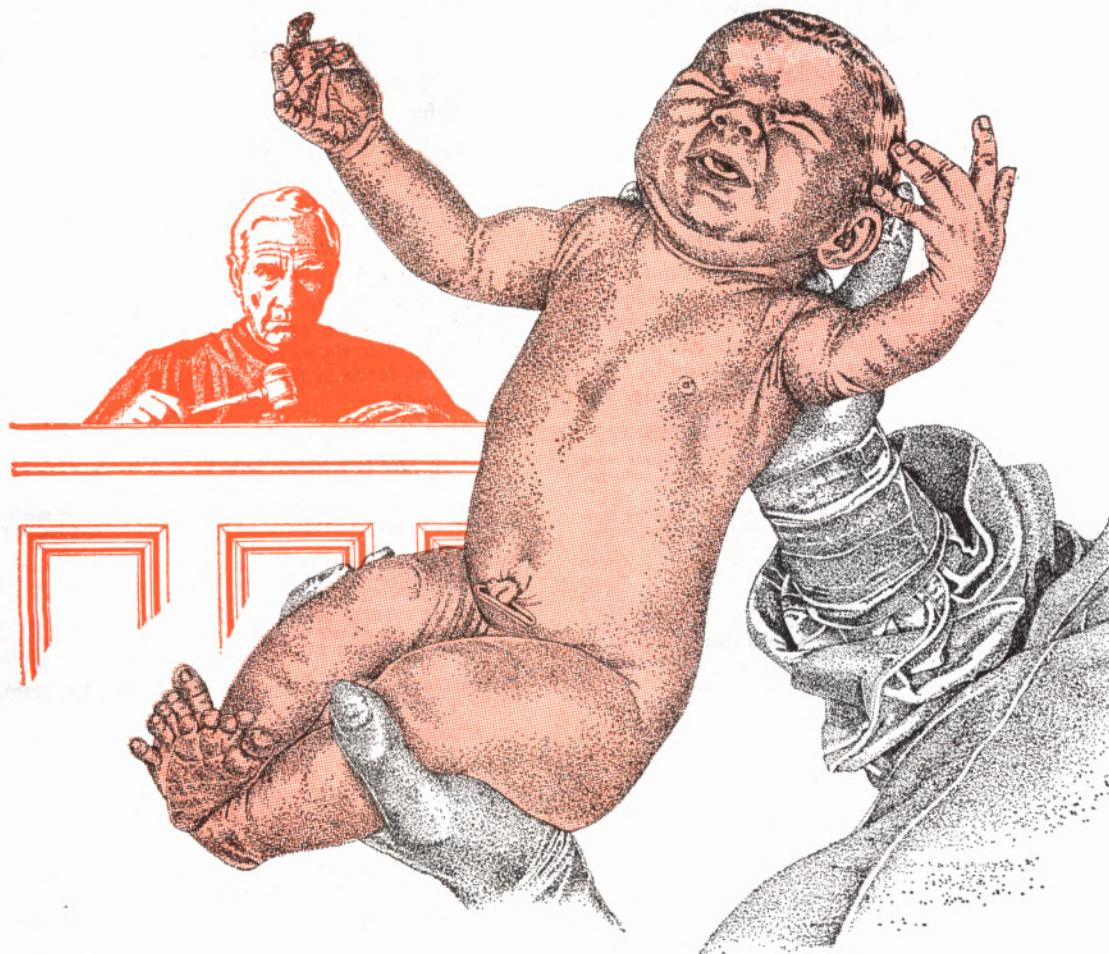


JANUARY 8, 1979

Awake!

CONVINCING EVIDENCE THAT GOD EXISTS



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Many persons profess faith in God. Perhaps you do. But what convincing evidence can you offer to back up your faith? Faith that will hold up under pressure must have a solid foundation. The above series of articles can help to strengthen your faith.

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WHY THIS MAGAZINE IS PUBLISHED

"Awake!" is for the enlightenment of the entire family. 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. It also shows how to cope with today's problems. Most importantly, "Awake!" builds confidence in the Creator's promise of a peaceful and secure new order within our generation.

The Bible translation used in "Awake!" is the modern-language "New World Translation of the Holy Scriptures," unless otherwise indicated.

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ARE YOU CONVINCED THAT GOD EXISTS?

Is belief in God merely a crutch for weak persons?

Can you give evidence to back up your belief?

"**P**ERHAPS we should say a prayer now. What should we pray for?" So asked a teacher in a grade-school classroom in a Communist country. "Let's pray for candy," she continued. The children happily closed their eyes and earnestly prayed for candy. Soon they opened their eyes and disappointedly the teacher asked: "Where's our candy?"

"Perhaps we're using the wrong name. Instead of saying 'God,' let's say 'Our Leader.' Let's pray to Our Leader for candy, very hard, and don't open your eyes till I say."

As the children shut their eyes, the teacher quietly put a piece of candy on each child's desk and went back to her desk. When the children opened their eyes and stared at the candy, they were overjoyed! "I'm going to pray to Our Leader every time," said one of the children excitedly. "Me, too," another added.

Interrupting their jubilation, the teacher said: "Children, I put the candy on your desks. So you know that it doesn't matter whom you 'pray' to—to God or anyone. Only another human being will give you anything. Praying to God for something is a waste of time." With a trusting gleam in their eyes, the children popped the candy into their mouths, convinced there is no God.—See *Reader's Digest*, June 1964, pp. 103-107.

This scene reportedly took place in an

atheistic Communist land, and it is taken as evidence that there is no God. But how do you feel about that?

Is God interested in selfish requests for pieces of candy? Indeed, few persons would pray for something as simple as a piece of candy. It is more likely that they would ask God for peace and tranquillity. Yes, we yearn for freedom from the fear and insecurity that stalk the streets. Yet we do not have it today. Hence, with their prayers apparently left unanswered, many feel that there is no evidence that God exists.

Some persons point to philosophers and scientists who are atheists. But should the fact that some highly trained individuals reject God cause us to have doubts about his existence?

Such men may have spent years in study and have many facts at their fingertips. But do they really have all the answers in this modern world? Despite their influence, what is the world scene like?

Man's modern technology seems to promise good things. Yet the New York Times of November 28, 1976, posed this question in a headline: "Can the World Exist Until 1984?" The accompanying article referred to the alarmingly carefree "insanity" on the part of industrialized lands regarding "the worsening energy crisis."

Another recent article warned: "The unguided and hence wildcat growth of tech-

nology has brought not only America but the entire world to the brink of disaster so monstrous in its proportions that it defies the imagination."

A world on the "brink of disaster." That is the world that has been produced by men, many of whom do not believe in God. Surely, man has not fared so well in attempting to bring about a secure and peaceful world. If there is a God, man certainly could use His help.

Of course, some persons will say: "I know there is a God. I can feel it!" Yet, such "feeling" is not convincing evidence of God's existence, is it? You may believe that God exists. But what if someone asked you: 'How do you know that God

exists?' Would you be able to give convincing evidence to back up your belief? Unless you are personally convinced about the reality of God, it is not likely that such faith will hold up under intense pressure. Also, what about your children? Are you sure that they do not have any doubts about God's existence? Is their conviction strong enough to withstand the onslaughts of evolutionary teaching at school? Could they have seen through the shallow, childish reasoning of the atheistic teacher?

Whether you are convinced of God's existence or not, would it not be wise to consider any possible evidence available as to the existence of God?

CONVINCING EVIDENCE FROM SOUND REASONING

TO BE convinced of something, we must be presented with proof or sound evidence. "Now faith is the substance of things hoped for, the *evidence* of things not seen," wrote an inspired Bible penman.—Heb. 11:1, *Authorized Version*.

In the original Greek, the word for "evidence" means "*a proof, that by which a thing is proved or tested.*" The word was used by contemporary non-Biblical writers to refer to proof in court cases. Certainly, this would involve more than emotions; it would require the presentation of facts. Who would go to court and say, "I *feel*" that the defendant did this or that? No, you would have to present proof, convincing evidence.

So we must deal with facts. Yes, what proof or evidence is available that God *must* exist?

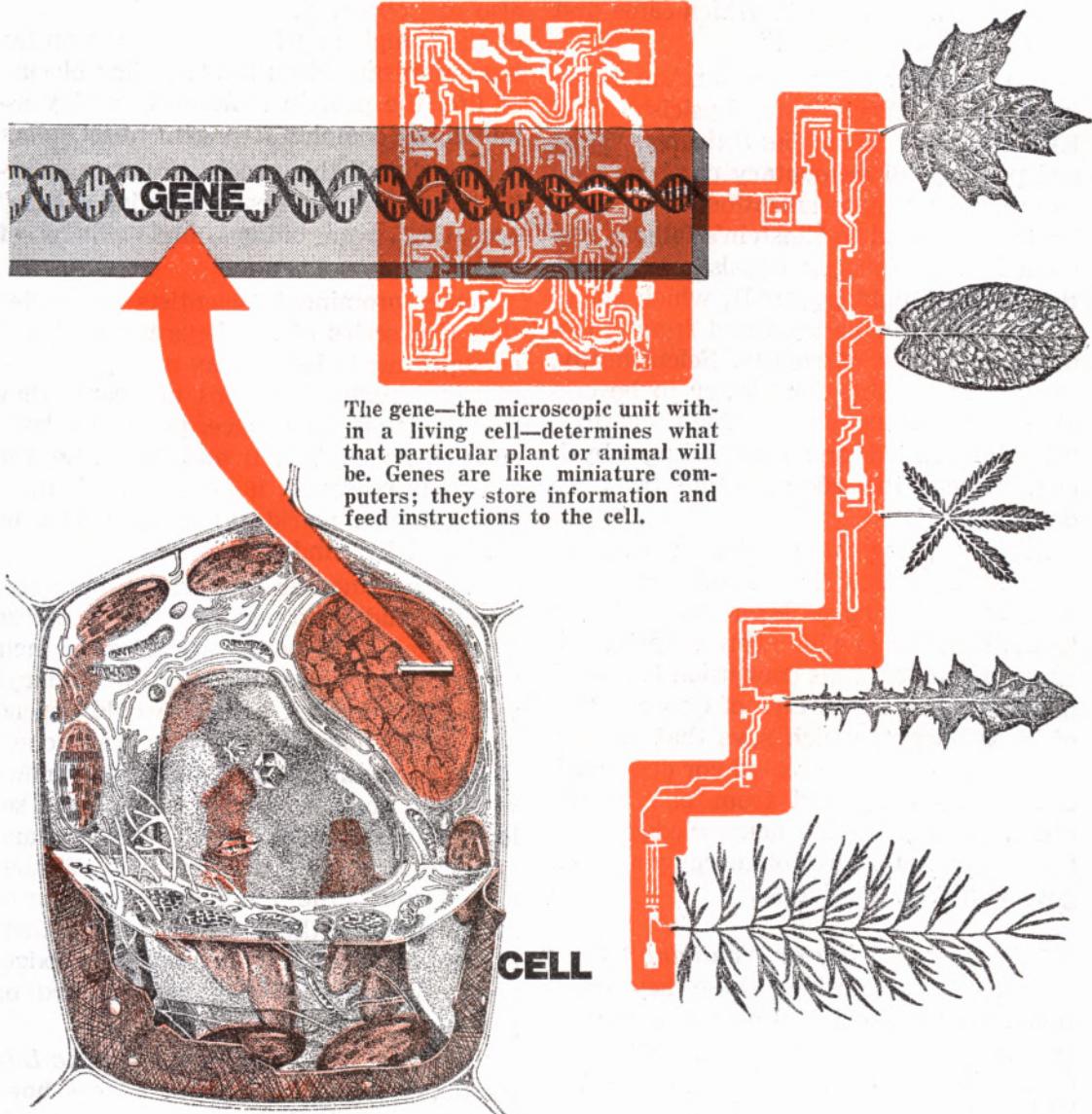
Sound Scientific Logic

It is a scientific and logical axiom "Out of nothing, nothing comes." Mathematically, zero times 1,000 is still zero! Even a child realizes this. If he takes his piggy bank, puts no money in it and hides it, and if no one touches it for days, even for months, when he takes it out what does he find? Still no money. Matter does not spontaneously appear or just "pop" into existence.

Yet we have an abundance of material objects in the starry heavens. Where did all of these come from? Logically, they could not have come from nothing. So there must always have existed something from which all these things could have come into existence. That "something" must be eternal.

As recently as 1977, cosmologist Jayant

COMPUTER



The gene—the microscopic unit within a living cell—determines what that particular plant or animal will be. Genes are like miniature computers; they store information and feed instructions to the cell.

Narlikar said that the most fundamental question in cosmology (the study of the origin and development of the universe) is: "Where did the matter we see around us originate in the first place?" Also, comparing the universe at its beginning to a very compact "cosmic egg" that supposedly exploded, biochemist Isaac Asimov says:

"Astronomers are bound to ask: What happened before the cosmic egg? Where did it come from?"

Trying to show the origin of the stars from dense dust clouds, astronomer Fred Hoyle reached another dead end. He said: "Both these elements [making up the dust] are produced in stars . . . But how did

this happen, if we can't have any stars until after we have dust? Which came first the chicken or the egg?"

The vast majority of scientists today agree with Czech astrophysicist Josip Kleczek, who said in *The Universe*: "Most and possibly all elementary particles may be created by materialization of energy." He then referred to Einstein's famous formula $E=mc^2$ (energy equals mass times the speed of light squared), which shows that matter can be produced from a tremendous source of energy. Scientifically, then, it is possible for matter to be created from a source of "high energy." "But," lamented one outstanding physicist, "where the energy came from we don't know."

So, what logical conclusion can we reach? Simply this: That a source of "high energy" must have been that eternal "something" from which this material universe originated. This conclusion is backed up by the well-tested Law of Conservation of Mass-Energy, which says that energy-mass can neither be created nor destroyed, but merely converted from one to the other. Hence, science acknowledges that from an eternal source of energy you could get the material universe.

First Cause—Living or Nonliving?

Now please consider these key questions: Was this original eternal source of energy a living, intelligent personality? Or was it something inanimate, nonliving? Did the universe merely arise out of purely mechanical, physical movements apart from conscious, intelligent direction?

Scientists, by carefully examining the universe, have seen evidence of machine-like precision. Heavenly bodies follow laws so exact that years in advance scientists can predict various celestial happenings. Moreover, some of our most accurate time-pieces are set by the stars.

Very organized gatherings of matter also are observed. Especially is this true of the complex systems that make up living organisms. Even the "building blocks" of life, the protein molecules, display astoundingly complex arrangements of atoms.

How did all this precision and complexity arise? Is it the result of "blind chance" operating over billions and billions of years?

Some prominent scientists suggested that if a series of monkeys were allowed enough time to bang away on typewriters, in time—perhaps billions of years—they would, simply by chance, produce a book such as Tolstoy's *War and Peace*. So, the scientists reasoned, if given enough time, this complex world gradually would be produced by random chance.

But, as another researcher observed, "You would need someone to recognize when they [the monkeys] had done their work. . . . and just how long the monkeys would be expected to take would depend on exactly how the selection was done." Yes, an intelligent individual who knows what the book says must be there to select what is produced by the monkeys and arrange it into the masterwork. Without a "selector," the monkeys would never really produce the book. At most, their efforts would result in an alphabetic hodge-podge or mere lines of disconnected or partial words.

"Blind Chance," says the book *The Life Puzzle*, "is a creative fellow. . . . He is, however, very limited. Low levels of organization he can produce exceedingly easily . . . but he becomes very quickly incompetent as the amount of organization increases. And waiting for a long time, or using massive material resources, is not, as we saw, much help."

Even youngsters know that you cannot build a "house" out of toy "building blocks" merely by tossing the blocks into the air,

with the hope that by chance they may form a "house." True, maybe on a certain toss, two or three blocks may stack up on each other. But what chance is there of an organized "house" being built? In fact, unless the child protects the few blocks that by chance did stack up, these could be undone by the next toss. Someone must manipulate the blocks to produce an organized, complex "house."

Therefore, by their own observations scientists have been forced to rule out "Blind Chance" as the factor responsible for the high degree of organization evident on earth and in the universe.

In 1859 Charles Darwin proposed that "natural selection" was the guiding "selector" that could organize the results produced by blind chance and bring order out of chaos. Natural selection is believed to be a process whereby only "right" (favorable) designs or organisms (plants and animals) especially suited for their surroundings survive, and, hence, pass on the "right" design to their offspring, gradually "evolving" into more complex forms of life.

Yet, after describing the many unique conditions that permit life to exist on earth, evolutionist C. F. A. Pantin, former professor of zoology at the University of Cambridge, England, admitted that "the operation of natural selection did not account for all the special features of the natural world."

What kind of "special features"? Well, zoologist W. H. Thorpe has called a certain feature "one of the most surprising and disturbing jolts to evolutionary theory in recent times." It is the unbelievable complexity of the gene—the microscopic unit within a living cell that determines what that particular plant or animal will be. Genes are complicated indeed! Like miniature computers, they store information and feed instructions to the cell. If all this information were written out in stan-

dard type, it would fill an encyclopedia of about 1,000 volumes!

What chance would there be for a complicated gene to originate by natural selection through "random mutations" over billions of years? "The chances are, then, still unimaginably small (10^{-415}) that a proper DNA molecule would be produced in this time," writes biologist Frank B. Salisbury in the scientific journal *Nature*. "Unimaginably small"! One chance out of 1 followed by 415 zeros!

Though Salisbury believes in evolution by natural selection, nevertheless the impossibility of such a thing's happening caused him to conclude: "Special creation or a directed evolution would solve the problem of the complexity of the gene."

Some intelligent force must have "directed" the construction of such a complex molecule. It could not have developed by mere chance or even by "natural selection." Nonliving matter, like atoms and molecules, does not order itself.

"We also know that the most basic characteristic of life is that it can reverse entropy [the tendency of highly organized systems to become less organized], that is, it can restore order in contrast to the tendency of non-living matter to reduce order (or increase entropy; i.e., stones tend to roll downhill, not uphill)," reports the book *The Reflexive Universe*.

What does all of this tell us? That an original Source of Energy must have been alive to provide direction as the energy at his disposal was used to create the natural world around us.

We are drawn by sound scientific logic to the same conclusion anticipated over 2,700 years ago by the Bible in this scientifically accurate statement: "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 . . . Due to the abundance of dynamic energy, he also being vigorous in power, not one of them is missing."—Isa. 40:26.

EVIDENCE OF DESIGN

THE existence of design invariably calls for a designer with skill and ability. Who would think for a minute that a finely tooled watch would form by accident? Its precision of movement is evidence of a skilled designer.

So, too, let us take a good look at the human body to see indications of a great Designer. A glistening newborn baby, teeming with life, is in itself a breathtaking miracle. Moreover, within this little "bundle" are evidences of sophisticated design that impress even highly educated engineers and scientists. So, as the child develops, notice some examples of superb designing.

Our Bones: "Triumphs of Structure and Design"

Why did the book *The Body*, which strongly advocates evolution, describe the bones in the way that it does? Because bone "supports the body the way a steel framework supports a skyscraper, and it protects its vital organs the way a cast-concrete roof protects a building's occupants. In filling these structural assignments, the human body solves problems of design and construction familiar to the architect and engineer."

How would you feel if you were a building contractor and were asked to enlarge a home, making it three times higher and wider and yet not disturb the occupant's daily labors or night's rest even for one hour? Impossible, you say. Yet that very thing is required of our bones. Our frame must increase threefold from our infancy till we reach maturity.

How do our bones accomplish this task?

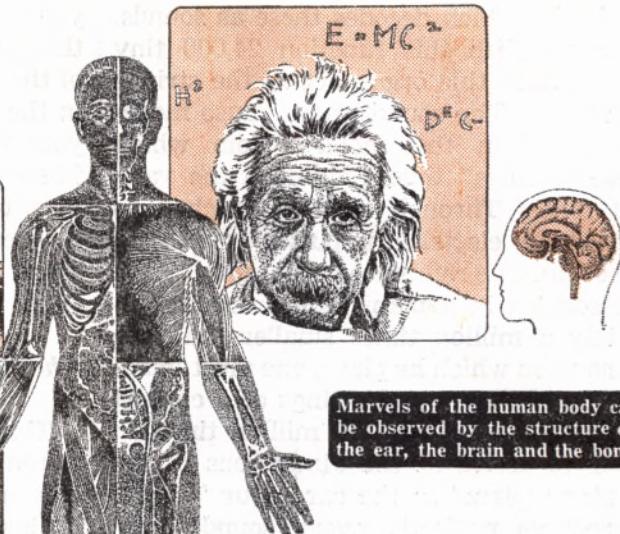
Imagine someone scraping a little material off the interior of the walls and ceiling of a room and then depositing this material on the outside of the walls and ceiling. Each week the room "grows" several millimeters until, finally, after 20 years, our house is three times as large as before. Well, special cells in our bones do this same "masonry" work—osteoclasts (bone breakers) and osteoblasts (bone builders).

And what strength and flexibility is built into our bones! Their construction is similar to reinforced concrete (a material of astounding strength used extensively in modern construction with poured concrete formed around flexible rods of steel). Crisscrossed through the concrete-like calcium in bones, run fibers of collagen, providing the reinforcement. Yet bone is eight times stronger than reinforced concrete. Its tensile strength is greater than cast iron. Your shin bone can regularly support a weight of nearly two tons and can be subjected to pressures up to 20,000 pounds per square inch (1,400 kilograms per square centimeter). Yet bone is flexible and amazingly light. If steel were used instead, a 160-pound (73-kilogram) man would weigh nearly 800 pounds (360 kilograms)! Think about that the next time you are floating in water. So a perfect mixture is used in our bones, combining strength with flexibility and lightness.

As if this alone were not enough, the interior of the bones is like a "mint" where new blood cells, the life of the body, are "coined and issued." As the book *Man in*



"The cochlea [a part of the ear] . . . is a musical instrument of complicated structure resembling that of a piano"



Marvels of the human body can be observed by the structure of the ear, the brain and the bones

Structure and Function comments:

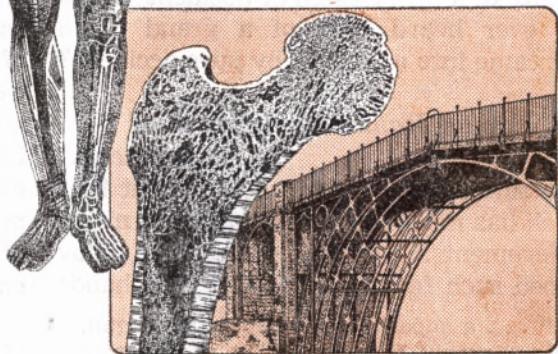
"Just as banks build their vaults in the foundations of their buildings so as to deposit their gold reserves in the safety and security of their depths, similarly the body has used the most protected places in the human body, the interior of the bones, to deposit there the coin and gold of the cell state: the blood."

No wonder the magazine *Today's Health* says: "The human skeleton represents a masterpiece of engineering design, . . ."

"The Ear: Masterpiece of Engineering"

So the book *Sound and Hearing* describes our organ of hearing. The book adds: "Yet behind [the outer ear] lie structures of such delicacy that they shame the most skillful craftsman, of such reliable automatic operation that they inspire awe in the most ingenious engineer."

Just think: miniaturized into a space about one square inch (6 square centime-



ters) is an entire high-fidelity receiving and transmitting system. From the outer ear (which gathers the sound waves) through the middle ear (which converts the sound waves into mechanical movements) to the inner ear (which transforms the mechanical movements into electrical impulses), we see evidence of really sophisticated design.

In the cochlea (a part of the inner ear resembling a snail's shell [note the picture above]), the real miracle occurs. It is here that mechanical movements are converted into electrical impulses and fed to

the brain, which decodes these as sounds. To accomplish this function 24,000 tiny hairs within this organ act as the strings of a piano. The sound waves cause movements within the cochlea from which these "strings" then reproduce the various tones. Through nerves attached to these hairs electrical impulses are sent to the brain. One reference work says: "Since the cochlea in a pianist's ear is approximately a million times smaller than the piano upon which he plays, one must imagine the keyboard and strings of a concert piano reduced about 100 million times in order to arrive at the dimensions of the auditory 'piano' in the ear." Our "piano" reproduces perfectly every sound—from a faint whisper to the crescendo of a great orchestra—and all of this within a part the size of a pea! Design or accident? Have you ever heard even of a grand piano that came into existence by pure accident?

The Human Hand: "Instrument of Instruments"

So said an ancient physician about that which has made possible so many of man's achievements. Biochemist Isaac Asimov echoed such feelings by calling the hand:

" . . . a superlative manipulative organ, incomparably the best thing of the sort in all the realm of life—with four limber fingers and an opposing thumb so that the whole can be used as a delicate pincer or firm grasper, a twister, bender, puller, pusher, and manipulator of piano and typewriter keys."

Indeed the hand is not only powerful, but strikingly agile. With it we can pound with a hammer yet also pick up a small pin.

Where are the powerful muscles located that control our fingers? Now if you were designing a hand, where would you put the muscles? Perhaps in the fingers themselves? How dreadful that would be! For even though they would have strength, they would look like thick sausages. Have

you ever tried to pick up a pin with a thick sausage? But the bending muscles of the fingers for the most part are located in the forearm. Flex your fingers and feel your forearm. Feel the muscles moving? These are connected by "strings" or tendons to the tips of your fingers, resulting in great strength, but genuine flexibility. What a remarkable design! By mere accident?

The Brain: "Most Miraculous Creation in the World"

That is what a leading anthropologist, Loren C. Eiseley, an evolutionist, called our brain back in 1955. Man today, with all his increased technology is still dumbfounded at what our brain is capable of doing. It has "10 billion nerve cells, any one of which may connect with as many as 25,000 other nerve cells. The number of interconnections which this adds up to would stagger even an astronomer—and astronomers are used to dealing with astronomical numbers," reports one reference work, and it adds: "A computer sophisticated enough to handle this number of interconnections would have to be big enough to cover the earth."

Yet all of this is miniaturized into a mass weighing about three pounds (1,360 grams), small enough to fit in your two hands. Fittingly it is called "the most highly organized bit of matter in the universe."

Our brain is capable of something for which no man-made computer has ever had a capacity: *creative imagination*. This was especially evident from the experience of composer Ludwig van Beethoven. When one of his greatest works, his Ninth Symphony, was introduced, the audience broke into "frantic applause," they loved it so. Beethoven was not audibly aware of it; he was totally deaf! Just think, he "heard" the full richness of the composition first in his own imagination and then set it down in notes, and he never actually

heard one tone. What power of creative imagination our brain possesses!

Is it not obvious that there are examples of superb designing in our body? Should we not be drawn to the same logical conclusion as that reached by an outstanding consultant engineer who struggled for two years designing an "electronic brain"? He said: "After facing and solving the many design problems which [the computer] presented, it is completely irrational to me to think that such a device could come into being in any other way than through . . . an intelligent designer. . . . If my computer required a designer, how much more so did that complex . . . machine which is my human body."

Could all these examples of design merely have "just happened"? George Gallup, a renowned statistician, one who carefully compiles figures and facts on certain subjects, once said: "I could prove God statistically. Take the human body alone—the

chance that all the functions of the individual would just happen is a statistical monstrosity." In other words, the chance that all of this could "just happen" without some directive power is, in reality, impossible, "a statistical monstrosity."

The great physicist Lord Kelvin who at the time of his death, "was without dispute the greatest scientific genius in the world," reached the same conclusion: "We are absolutely forced by science to believe with perfect confidence in a Directive Power—in an influence other than physical or dynamical or electrical forces . . . You will be forced by science into a belief in God." (Italics added)

We can see convincing evidence of God's existence through (1) sound scientific logic and (2) existence of design in the world around us. Still a question comes to our mind: What is this God like? To find a satisfying answer, please read the following article.

GOD EXISTS! BUT WHAT IS HE LIKE?

WHAT about his personality? Is he the type of individual we would grow to love if we got to know him intimately? Do you not feel that these are important questions?

How can we get to know some of his qualities? At Romans 1:20, the Bible suggests: "For [God's] invisible qualities are clearly seen from the world's creation onward, because they are perceived by the things made [“understood through His handiwork”—*New Berkeley Version*], even

his eternal power and Godship, so that they are inexcusable."

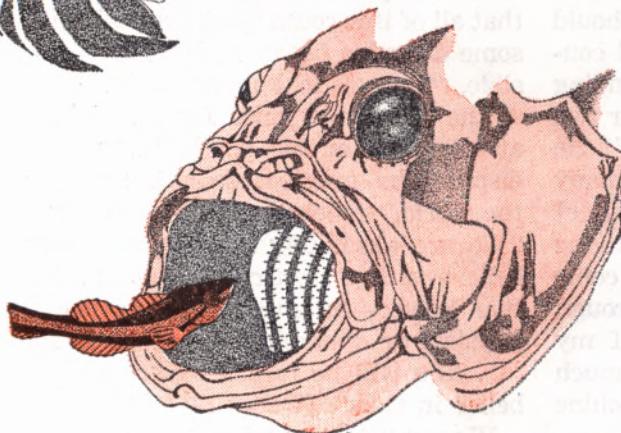
By taking an in-depth look at what God has made, "His handiwork," we can learn what some of his qualities are. Well, what do we see?

Love and Goodness

These qualities are very evident in the way in which we were designed. Our bodies were made to do more than merely live; rather, they were meant really to



Sometimes big fish permit "Doctor Fish" (also called "cleaner fish") to remove parasites from even inside their mouths



enjoy life. Our eyes can see in color. Some animals see only in black and white, yet the world is filled with dazzling colors. We can smell, and we have taste buds. So eating is not merely a necessary function; it is delightful. Such senses are not absolutely vital for life, but are an evidence of a loving, generous, thoughtful Creator.

Loving concern is also evident in the animal kingdom. The great number of little "cleaner fish," sometimes called "Doctor Fish," is an example. At present, over 40 species have been designated as "cleaners." These fish seemingly devote themselves to the removing of parasites and fish lice that could clog the gills of other fish and make them sick.

"More than this," a cleaner fish "will nibble away at patches of fungi and bacteria which may be infecting the skin, and if the fish has been injured, it will eat away any dead flesh and thus clean up the wound," reports the book *Animal Partners and Parasites*.

So you can see that these fish are very much like little "doctors," sometimes even maintaining "offices" or "cleaning sta-

tions." One "office" was observed serving over 300 fish during a period of six hours. Just imagine the picture: Fish waiting in line to be waited on, some "standing" on their heads or upside down as the cleaners work them over. All this "professional" treatment by the "doctors" and not one "doctor bill"!

How important is such cleaning activity? One of the top authorities in this field, Conrad Limbaugh, called it "a constant and vital activity." He once removed all the known "cleaners" from a certain area and within a few days the number of fish had dropped drastically—eventually about all had left. And the few that remained "developed fuzzy white blotches, swelling, ulcerated sores and frayed fins." All because the little "doctors" were gone!

Do the "cleaners" do it merely for the meal that they receive?

"None of them [the cleaners] appears to depend exclusively on the habit for its food."

"Neither of these two fishes [two of the most zealous cleaners] is highly dependent on cleaning for food, and they can subsist on small crustaceans; both pick these from plants, the señorita [a type of cleaner fish] can also take them from the bottom and directly from the water."

So they do not have to care for these other fish. Yet they do. Who could have designed such an efficient little cleaner—complete with bright colors to be easily identified, pointed nose and tweezerlike teeth? Who must have put such a living instinct into these little creatures? Only a loving, considerate Creator.

A factory owner with a wholesome appreciation for life will install in his factory many safety valves to protect those who work there. These valves, placed on boilers or other equipment to relieve pres-

sure that might build up to an explosive force, are evidence of his genuine care for people.

In our world we see many such "safety valves" put there by creation's Designer. The Creator "makes it rain upon righteous people and unrighteous." (Matt. 5:45) The way in which rain descends is one outstanding example of the use of "safety valves."

Water by the billions of gallons is stored above our heads in the clouds as vapor. Water is heavy, a cubic foot (.03 cubic meter) weighing over 62 pounds (28 kilograms). A large cloud is estimated to weigh as much as 100,000 tons! Can you imagine the havoc that would be wrought if the water vapor formed one massive "drop" and cascaded to earth? What devastation! But, for some still unexplainable reason, the tiny water droplets join themselves together around a particle of dust—but only up to a certain size, no larger—and then they fall to the ground. The gentle rain showers seldom hurt the most delicate of flowers. We surely benefit from this "safety valve."

Or consider the terror in winter if the water fell as colossal chunks of ice. Here again, at the moment of release, a "safety valve" produces little flakes that float down harmlessly and provide a cuddly blanket that conserves the warmth of the ground for the benefit of the vegetation.

Many persons in lands where the temperature can change rapidly may recall that when they were children, during the night when the temperature dropped suddenly, their mother or father got up and covered them with an extra blanket. Remember the next morning as you snuggled in your cozy bed, how "warm" you felt inside, knowing that Mom or Dad was so considerate of your welfare? Well, should it not warm our hearts toward our heavenly Father who provides this silvery blanket of snow for the preservation of

the vegetation? Yes, his "handiwork" testifies that he is a tender and loving Creator who cares about us.

Justice

What about the quality of justice? It is vital that we establish whether the Creator has this quality. We know that a God of justice would not forever tolerate the glaring injustices, the lawlessness, the climate of evil that exists earth wide today.

There is evidence of such a quality from something within ourselves. What? It is described in a statement of truth in the Bible:

"For whenever people of the nations that do not have law *do by nature* the things of the law, these people, although not having law, are a law to themselves. They are the very ones who demonstrate the matter of the law to be written in their hearts, while their CONSCIENCE [“sense of right and wrong,” *Amplified Bible*; the Greek word means “distinguishing between what is morally good and bad . . . commanding the one, condemning the other,” Thayer’s Greek-English Lexicon] is bearing witness with them and, between their own thoughts, they are being accused or even excused.” (Rom. 2:14, 15)

It is the existence of conscience, a law “written in [our] hearts,” that gives us a sense of right and wrong. This is strong evidence that our Maker himself must be a God with a moral sense, having the quality of justice.

Twenty-three centuries ago, Aristotle spoke of the reality of such an inward law, calling it a “natural justice and injustice that is binding on all men.” Others have called it “natural law,” “the supreme law” and the “law of nations” or of humanity. Yes, a natural sense of what is just or unjust seems to be “binding on all men.”

A prominent anthropologist, M. F. Ashley Montagu, stated the view that many scientists shared: “Murder is universally regarded as a crime, and if the murderer

is caught and brought to justice the penalty is usually death. Incest regulations are universal . . . private property is universally respected." Though what constitutes murder or self-defense or "private property" might vary considerably, the root practices are consistently condemned. Despite differing opinions as to the content of such "natural law," "almost all admit the *existence* of such a law. . . . conceived as the ultimate norm of right and wrong." (Italics added)—*Encyclopedia Americana*.

Many still would discredit the existence of conscience by arguing that by nature man is aggressive, even murderous, without a sense of justice. Evidence to the contrary has recently come to light.

One outstanding example was the recently discovered Tasaday, a primitive people living in the Philippine rain forest. These people are thought to have been isolated from the main stream of civilization and its pressures for hundreds of years. One of the scientists who lived with them for some time said: "These are incredible people. . . . no greed, no selfishness. . . . They don't know about killing, murder, war! Never heard of them." He also observed: "Everyone goes around talking about people being bad because that's human nature. . . . When you see these people, you have got to say, 'No, man is not basically evil.'" (*The Gentle Tasaday*—1975) Yes, though imperfect and with sinful tendencies, man still displays a basic sense of conscience. One encyclopedia put it thus: "Actually, no culture has yet been found in which conscience is not recognized as a fact." Indeed, this inward sense of right and wrong exists and does affect our conduct for the good.

'But what about the many murderers, rapists, sadists—persons who seem to have no conscience at all? Does not their be-

havior disprove such a conclusion?'—so some might ask in objection.

What if the pilot of an airplane refuses to listen to the instructions from the airport control tower and he crashes, causing extensive damage and loss of life? Does this prove that the control tower "does not exist"? Look, by contrast, at the hundreds of planes that generally comply with the instructions of the control tower, usually making the airport a safe place. So because some have ignored or "thrust aside" (1 Tim. 1:19) this "natural law of justice," refusing to be guided by it, that certainly is not sound evidence denying the reality of such a law.

During World War II, the Nazis committed horrors against innocent persons. For these acts that stunned the world, many of the Nazi leaders were brought to trial after the war. For the most part, these leaders denied responsibility for such acts, saying that they were merely obeying Nazi law and their governmental superiors.

"Political loyalty, military obedience are excellent things, but . . . there comes a point where a man must refuse to answer to his leader if he is also to answer to his conscience." So argued the chief prosecutor from Great Britain.

"Guilty" was the verdict against those men. Why? They should have obeyed "a higher natural law of justice," reported one reference work.

Some have criticized such trials, saying that such a "natural law" did not exist and the defendants could not legally be tried by it. However, the statements of some of these hardened leaders give additional support that such conscience does exist; that such a force was operative within themselves but was merely ignored. Defendant Walter Funk said: "And when these measures of terror and violence against Jews were put up to me, I suf-

fered a nervous breakdown . . . I felt ashamed and the feeling of guilt at that moment and I do feel the same way today, but too late." Hans Frank (sentenced to death for his crimes) admitted: "I feel a terrible guilt within me." (Italics ours)

Yes, if we are honest with ourselves we know quite well that we do have inside us an inherent sense of right and wrong, a "natural law of justice." Who put such a real law within us? Certainly man himself is not the author of such a law. It could only have originated with our Creator and Designer. Are we not led to the following conclusion: the Creator himself must be a God with a moral sense, a God of justice?

How grateful we should be to know this! For it assures us that he will not forever tolerate the gross injustices and wickedness that exist today. His sense of right and wrong, or justice, will cause him to act in behalf of those who want to live by his standards of right.

God's Qualities Should Draw Us to Him

From our short examination, what is your personal judgment or "verdict"? Many readers no doubt would agree that there is convincing evidence pointing to this conclusion, namely, that a loving and just God of awesome power must exist.

Indeed, to see examples of his concern and generosity toward us is touching. Many, perhaps, would like to get to know him even better. What we observe about him through his "handiwork," though impressive, is still only "some clue to his [God's] nature." (Acts

14:17, *The New English Bible*) A number of questions still remain unanswered.

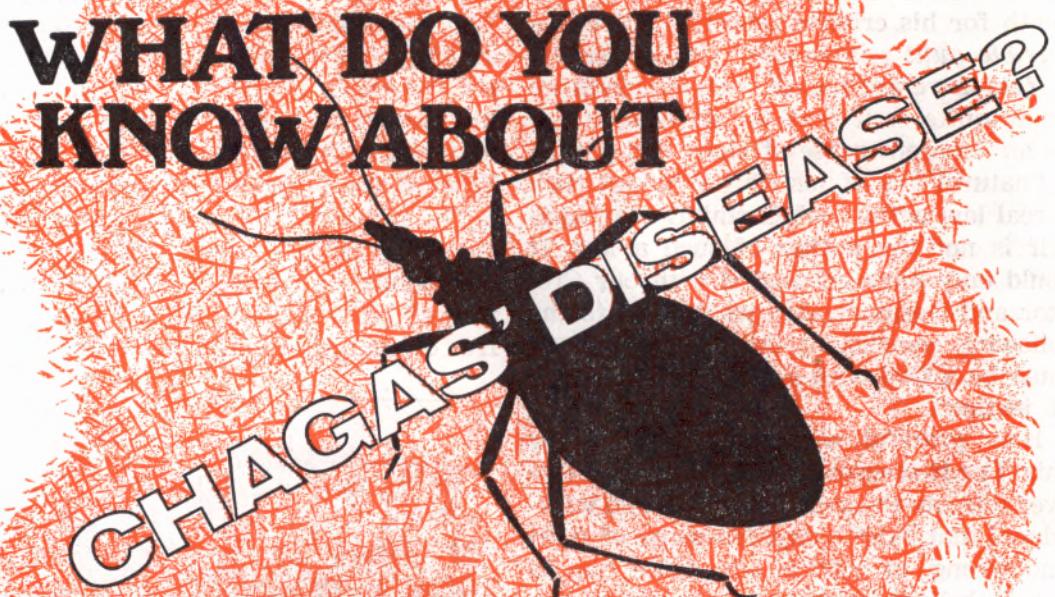
For instance, it is natural to wonder why wickedness developed in the first place. Why has God allowed it to continue for so long? When will he use his power to rid the earth of evil, thereby displaying his justice? In fact, what was his purpose in making the earth and all life on it? What is the purpose for our existing?

The answers to these questions are available. Why not get in touch with the people who publish this magazine, Jehovah's Witnesses? They will be happy to help you free of charge to find convincing answers.



**Nazi War Leader
Hans Frank:
"I feel a terrible guilt
within me."**

WHAT DO YOU KNOW ABOUT CHAGAS' DISEASE?



By "Awake!" correspondent in Bolivia

WHILE reaching for toys, a child in a remote Bolivian village touches a window ledge in the adobe hut and comes in contact with an insect, the *vinchuca*, or its excrement. Later, the child suffers from inflammatory swellings, symptoms of Chagas' disease. A man, sleeping on the dirt floor of his dwelling, is bitten by the same type of insect. Years later he has an advanced case of Chagas' disease. From the southern border of the United States to the central regions of Argentina, it is estimated that 12,000,000 people suffer from this affliction. It is called "one of the biggest problems of Latin America."

What, then, are the symptoms of Chagas' disease? Once contracted, how can the disease be alleviated? What preventive measures might be taken to avoid con-

tracting the affliction? Particularly if you live in the tropical countries of South and Central America, it would be good to know the answers to these questions. Even if you do not live where Chagas' disease is most prevalent, there are sound reasons to learn more about it.

The *vinchuca* is one of the principal carriers of the dreaded *Trypanosoma cruzi*, a tiny one-celled parasite, which multiplies in humans and animals, and which is the cause of Chagas' disease. It was in 1908 that Charles Chagas discovered the parasite for the first time in the intestine of the *vinchuca*. But the disease can also be transmitted to humans from dogs and cats.

Central and South American countries have participated, separately and also jointly, in studies surrounding Chagas' dis-

ease and its eradication. In Bolivia, studies have intensified since the 1940's. According to one Bolivian investigation, 1,800,000 people in that country of nearly 5,000,000 inhabitants are exposed to the possibility of *vinchuca* bites, and 600,000 actually have been bitten.

Harm Done by the "Vinchuca" and Chagas' Disease

These studies have revealed that some *vinchucas* do not carry the parasites, and those that are carriers do not infect a person by the original bite. When filling its body with blood from the victim, a carrier insect may leave its excrement near the puncture. It may drag its posterior part over the bite, thus introducing the parasites into the victim's bloodstream. Or, at times, the victim immediately scratches the bitten area and infects himself.

Why is the victim not aware of the *vinchuca*'s presence? This insect is active at night. Often it drops from the ceiling onto the sleeping victim. It sticks its sharp, daggerlike snout into the victim, usually around the eyes, where the skin is very soft, or into the supple skin of the neck. The bite is painless. Therefore, without the victim's being aware of what is happening, the *vinchuca* may suck off a small quantity of blood. Later, however, an inflammation develops around the bite. The eye may even swell shut. There may also be a glandular swelling.

Once in the bloodstream, the parasites reproduce rapidly. In the first few weeks, the parasites are detectable by laboratory analysis. Afterward, because of the production of antibodies in the victim, the parasites multiply less rapidly, making it more difficult to detect the disease by medical examination.

In the final stages of the illness, the parasites cause troubles ranging from

heart failure to liver and spleen infections. Harm may be done to the lymph nodes and the brain. The victim's blood pressure drops. Sometimes the parasites get into the heart. As they begin to multiply and grow, they cause clotting or stoppage in the blood vessels. Worse still, they burst the veins. Some victims suffer from enlargement of the large intestine. Digestive and elimination problems may result.

Certain victims of Chagas' disease develop these serious reactions later on in life. The progress of the disease has been likened to a great iceberg in water. One small part of the total mass can be seen above the water, while the greater portion is submerged. It is the same with the symptoms of Chagas' disease. Quite often the victim and his physician are unaware of the patient's having contracted the disease, and the effects usually show up 15 to 20 years later, when the disease is much more advanced.

Chagas' disease is not necessarily contagious. If one member of the family has it, all will not necessarily contract it. The principal way in which the disease is transmitted is by the bite of a carrier of the parasite. However, babies born of diseased mothers can get it, as the parasite penetrates the mother's placenta and reaches the developing infant during the last months of pregnancy. It is also known that a suckling baby can get the parasite through the milk of a diseased mother.

The *vinchuca* is not limited to crawling, but can also fly. It bites animals, too, even though it lives mainly on human blood. Interestingly, poultry, doves and other domesticated birds do not develop the disease. Nevertheless, where there are animals or birds in or near the home, there is an open invitation for blood-sucking insects to enter the house and thereafter introduce Chagas' disease to the occupants.

Another Danger—Blood Transfusion

The book *Usted y la enfermedad de Chagas* (You and Chagas' Disease) points to another danger—the passing of parasites from donor to patient by way of a blood transfusion. According to the publication *Tropical Diseases Bulletin*, Chagas' disease, along with African *trypanosomiasis* (African sleeping sickness), yaws and filariasis (hairlike worms from two to three inches [5 to 8 centimeters] long), is transmittable through blood transfusions. In areas where blood is donated indiscriminately by the public, serious danger exists of contracting Chagas' disease. Hence, those who obey the Bible's law to abstain from blood, both animal and human, are more likely to remain in good health.—Acts 15:28, 29.

It should also be noted that international travel can quickly transport disease-carrying parasites from Latin America to any other part of the globe. Hence, those who avoid blood transfusions are, to that degree, not running the risk of being infected by the disease.

Prevention

To date, there has not been a successful way to cure this disease completely. Drugs

often produce problems that are nearly as bad as the malady itself.

Some suggest internal and external use of herbs in order to counteract the effects of the disease. Herbs and blossoms of the spilanthe plant are recommended. It is also suggested that one eat oceanic plants like kelp, as their iodine content can be assimilated by the organism. Herbs appear to lessen the effect of the disease, but they do not eliminate the parasites.

Cleanliness is the most important preventive measure. This is because the *vinchuca* makes its home in the dark, unhygienic areas of houses made of mud, straw, palm leaves and other rudimentary materials. Therefore, it has been suggested that new structures be made of cement, plaster and lime to eliminate possible habitats for the *vinchuca*. Also, the regular cleaning of houses and outbuildings is of utmost importance.

Charles Chagas, the discoverer of the insect carrier, recommended the destruction of the *vinchuca* as the only solution for eliminating the disease. Since there is no satisfactory cure for the infection, many are in agreement with this. At present there are insecticides that destroy the *vinchuca* in all its stages, including the egg stage.

However, on a personal level, one does well to reflect on God's law given to the nation of Israel. That law, along with the writings of the Christian Greek Scriptures, requires holiness, cleanliness. (Lev. chap. 19; 2 Cor. 7:1; Rev. 21:8) When certain diseases developed in Israelite dwellings, the entire structure was torn down. (Lev. 14:43-45) As a result of such laws, the nation of Israel remained free from the sicknesses of the surrounding nations in the land of Canaan. Likewise today, a high standard of cleanliness plays a major part in preventing Chagas' and other diseases.

In Future Issues

■ Coping with Heart Troubles

■ Understanding and Enjoying Music

■ Rejoice! World Unity Is Within Reach!

MERCURY

-SPAIN'S "LIQUID SILVER"
BONANZA



By "Awake!"
correspondent
in Spain

HAVE you checked the temperature lately? If so, very possibly you consulted a mercury thermometer. Perhaps you wondered where the mercury came from. The source could well have been the Almadén mine in Spain, where the world's richest mercury deposit is found. More than a quarter of the world's mercury production comes from this seam.

"Quicksilver" in English, *Quecksilber* in German, *vif argent* in French, *azogue* in Spanish and *hydrargyros* in Greek—all are names for mercury—that elusive, slippery, silver-colored, "live" or "quick" liquid metal. In the modern world, mercury has more than 3,000 uses. How is it obtained?

Geologists say that eight elements form more than 98.5 percent of the earth's crust, and that the remaining 95 or more,

including mercury, constitute a mere 1.5 percent of the total. Consequently, mercury is not easy to find.

Mercury in Its Natural State

During the formation of the earth, mercury was one of the thermal liquids that pushed up to fill the cracks and fissures of certain parts of the earth's crust. In some cases, it remained as pockets of liquid mercury, but in the majority of cases it combined with sulfur to form mercuric sulfide or cinnabar. The rock that contains this mineral has a reddish hue.

On closer examination, it has a speckled appearance. Those red speckles contain the precious mercury, which is separated from the ore by the slow process of mining the rock, crushing it, roasting it and distilling and condensing the resultant vapor, then, by filtration or agitation, separating from the condensate the hydrargyrum (from the Greek word meaning "liquid silver"). Today we call it "mercury," a name that was applied by the alchemists in the sixth century C.E.

When did man first discover mercury? One source says that mercury has been found in Egyptian tombs dated as early as 1500 B.C.E. We can find definite reference to the metal in the writings of Theophrastus (a disciple of Aristotle), who, about 300 B.C.E., described how "liquid silver" was prepared by a simple pro-

cess of pounding cinnabar stone together with vinegar in a copper vessel. Actually, the pounding served to separate small quantities of free mercury, but did not liberate the mercury that was in compound form.

Pliny the Elder reported, about 50 C.E., that each year some 5,000 kilograms (11,000 pounds; 5 metric tons) of cinnabar were taken from Sisapo in Spain (possibly the area known today as Almadén) and were transported to Rome, where cinnabar was used as vermillion pigment. The mercury was used to recover the "noble" metal, gold, as well as being used with gold in a gilding process.

At the beginning of the eighth century C.E., the Arab invasion of the Iberian peninsula began. This Arab and Moslem occupation lasted for eight centuries. During this period, the Arabs encouraged the exploitation of the Almadén mercury mines. As a result, much of the present-day Spanish vocabulary that has to do with mercury mining springs from the Arabic. For example, even the full name of the town, Almadén del Azogue, is derived from the Arabic words *al-ma'din* (the mine) and *az-za'iq* (the mercury), or The Mine of the Mercury. The Spanish word for the condensation chamber that is used to obtain the mercury is *aludel*, from the Arabic *al'-utal*, which refers to the receptacle that was used for condensing the mercury vapor into liquid. The old furnaces that were used in Almadén were called *jabecas*, derived from the Arabic *sabīka*, or ingot. Similarly, the men employed to construct the ovens were *albañiles*, from *al-bannā*, the bricklayer or builder, or were *alarifes*, from *al-'arīf*, the teacher or skillful one.

The Spanish king Alfonso VII recaptured Almadén in the year 1151 C.E., and during the following centuries the Spanish crown ceded the mine for private exploitation. In the 20th century the direction

of the mine was put in the hands of an administrative council that has progressively modernized the mine, a process that continues to this day.

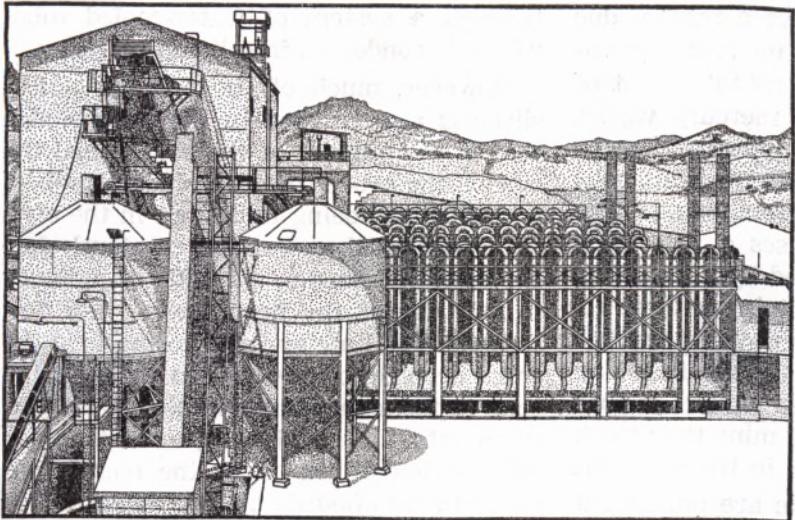
Distillation Methods Through the Centuries

The primitive methods for obtaining mercury were far from efficient, as is shown by the fact that in the 17th century workmen were able to feed the new Bustamante furnaces with burned stone that had been thrown out after use in the Arab *jabecas*, or ovens, and were still able to get appreciable quantities of mercury. The first Bustamante furnace was installed in 1646. In two years, nine more of these were built, and eventually 16 were in operation. This boosted mercury production from 2,527 *quintales*, or hundred-weight, in 1646 to an annual production of 7,000 hundredweight in 1776.

Uses of Mercury

As the centuries rolled by, the uses for mercury multiplied. In the 16th century, Paracelsus, a Swiss-born alchemist and physician, employed mercury in the treatment of syphilis. In 1558, Bartolomé de Medina improved the method for extracting silver by a process that involved the use of mercury. The weather barometer was invented in 1643 by the Italian physicist Torricelli, who used a column of mercury to determine the atmospheric pressure. The thermometer with which the doctor or nurse checks your temperature was invented in 1720 by the German scientist Gabriel Fahrenheit, who calibrated the tube containing the expanding column of mercury, making 180 divisions between the freezing and boiling points of water.

Another and less peaceful use for mercury was invented after E. C. Howard discovered mercuric fulminate, which was used until the 1960's to detonate explosives. The list of uses has snowballed in



View of the crushing and oven plant at the left, and the distillation tubes at the right

our 20th century to include agricultural and industrial fungicides, electric switches and mercury batteries, to name only a few. Mercury in vapor form serves in ultraviolet lamps, and in mercury lamps that light the highways. In some cases, mercury vapor is used instead of steam for power generation. This versatile metal has also been used in dental fillings as an amalgam with a silver and tin alloy. It does not appear to be poisonous when so used.

Mercury—Friend or Foe?

This is a legitimate question, for in the last 20 years man has learned the hard way that mercury is a servant that has to be strictly controlled. In many countries, including Japan, Sweden, the United States and Canada, evidence has accumulated establishing the fact that mercury in certain forms is a poison that affects both human life and animal life.

Investigations have revealed abnormal amounts of mercuric compounds in certain fish and game birds. These excesses

have been traced to industrial plants that have released mercury along with other waste products, and also to fungicides using methyl mercury. This compound, entering into the food chain, produces catastrophic effects.

Methyl mercury is especially dangerous to pregnant women, since it tends to accumulate in the fetus, causing brain damage to the unborn baby. In New Mexico, U.S.A., in 1969, a family was poisoned by eating pork from a hog that had been fed on grain treated with methyl mercury. Three children were severely crippled, and the fourth, poisoned while in the womb, was born blind and retarded. In the area of the Japanese city of Minamata, mercury poisoning reached epidemic proportions before the doctors finally tracked down the culprit—methyl mercury that had belched out of the effluent pipe of a nearby factory, contaminating the fish, which was a main local source of food.

A Visit to the Almadén Mine

Almadén is a town of some 11,000 inhabitants—a place of clean white rows of single- and two-story houses. As we make our way to the mine, we are impressed by the number of men on the streets, just standing around chatting with one another, or taking the occasional *copita*, or small glass of brandy or anisette. Why should these men be on the streets? Because the mercury miners can work un-

derground only eight days a month, due to the toxic effects of the mercury vapors, coupled with the constant threat of contracting silicosis. The mercury vapors cause the disease called hydrargyrm or mercurialism, which affects the brain cells and causes a constant trembling of the extremities. Silicosis causes a hardening of the lungs and is marked by a shortness of breath. To avoid or minimize these effects the miners work one day and are free for the next two days (or three, if Sunday is included). A further safeguard is that after three months in the mine they work one month at the surface in the open air.

The town and the mine are built right on top of the almost vertical seam of cinnabar. The mine has three shafts, named "San Miguel," "San Joaquin" and "San Teodoro." We chose to be observers of operations at the San Joaquín shaft, which has a depth of 488 meters (1,600 feet).

The hardest and most dangerous work is the drilling out of the ore-bearing rock, but more interesting to us was the process that takes place above ground. The first stage is the arrival of the tubs or mine cars, loaded with cinnabar rock. These come up two at a time, each bearing about 15 hundredweight (760 kilograms) of rock.

From the pithead the rock is passed into two huge crushing machines that reduce it to gravel size. From there the crushed stone passes to a deposit and is drawn off by conveyor belt to feed the four ovens. These modern ovens are as high as a four-story building and are multi-deck or multihearth furnaces. Those in Almadén have eight decks. The crushed mineral starts its journey at the top deck and is kept in motion by rotating arms that work the mineral toward the openings, allowing it to pass into the deck below. A temperature of 800 degrees Celsius (1,500 degrees Fahrenheit) is needed to free the mercury vapor. The vapor passes

through a system of water-cooled tubes where it condenses into liquid mercury.

However, much of the precious quicksilver is also trapped in the gray sludge that is the product of the baking and the condensing processes. This sludge is mixed with lime at hoeing tables out in the open air. There masked workers constantly hoe the mixture, causing a trickle of mercury to run out of the hoed mass every few seconds. The lime and the hoeing help the small droplets of mercury to coalesce and thus to form the snakelike flow that runs down into the small *pozo*, or well. From this section of the plant the mercury is taken to the *almacén* or warehouse, where it is stored in vats until it is measured into iron flasks. These flasks hold 34.5 kilograms, or 76 pounds, which is the standard weight for which prices are quoted on the London and New York markets.

While in the warehouse, we observe some of mercury's interesting features. To illustrate a point, one of the employees climbs into the vat of mercury. Instead of sinking into the liquid, he remains completely on top of it! This looks very strange. But when we realize that mercury is 13.5 times as dense as water (about 1.2 times the weight of lead), we do not marvel that it supports the weight of a man almost as a solid object does. Furthermore, mercury is the only metal that is liquid at ordinary temperatures. It passes from the solid to the liquid state at -39 degrees Celsius (-38 degrees Fahrenheit) and boils at 357 degrees Celsius (674 degrees Fahrenheit). Another curious fact about mercury is that it is a liquid that a person can touch without getting wet. This is due to its great cohesiveness or high surface tension.

The next place that we visited was the analysis laboratory, where the laboratory chief explained to us the detailed control that is maintained daily to check the qual-

ity of the mercury, as well as the richness of the ore coming out of the mine. The laboratory makes a control analysis of all the materials that are used in the distillation process, and a similar analysis of all the resultant products, whether solid, liquid or gas. We were told that the mercury produced in Almadén has a purity rating of 99.997 percent, a purity surpassed only by the natural or native mercury that is occasionally found in pockets in the mine.

The Almadén mine produces from 7 percent to 11 percent mercury from its cinnabar ore, which proves it to be the richest cinnabar ore deposit in the world. Other

very productive mines are located in Yugoslavia and Italy. But even after so many centuries, Almadén still holds first place. The shafts keep going deeper and deeper, and the cinnabar rock continues to appear. In fact, there is so much cinnabar in the region that the State has reserved the right to exploit all the ore within 25 kilometers (15 miles) of Almadén.

The next time that you look at the thermometer, or use a modern flash camera, or look into a mirror, you can think of the effort and ingenuity of the men who have, over the centuries, developed the mining and refining methods and the many uses of the versatile metal mercury.

Pewter—For You?

Both the high price of silverware and the current nostalgia over the past have in some areas sparked a growing interest in pewter tableware. But, you may wonder, just what is pewter anyway?

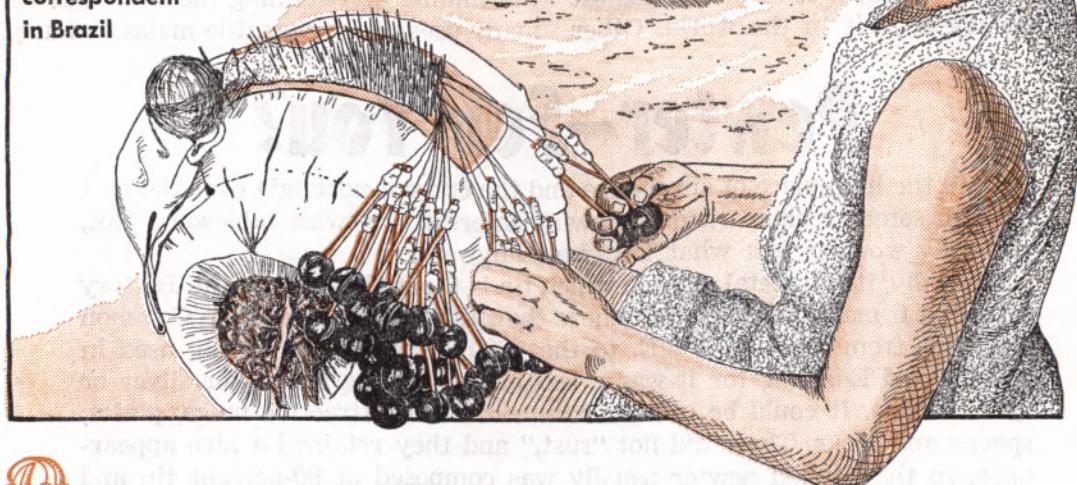
Basically, it is a metal alloy in which tin is the major component. History says that it may have been used more than 1,000 years before the Common Era. But from the 1300's C.E. to the 1800's it was very widely used in Europe and England, for it was a less expensive alternative for silver or gold utensils. It could be cast or hammered into attractive mugs, plates, spoons and forks. These did not "rust," and they retained a nice appearance. In that period pewter usually was composed of 90-percent tin and 10-percent lead, though sometimes a little copper was added for hardness. Poorer quality pewter might have up to 40-percent lead, making it much softer and more easily dented.

In more recent times lead has been eliminated from pewter. The lead tended to cause some tarnishing, and it could combine with certain foods to form toxic substances that might even produce lead poisoning. Antimony and copper are now combined with the tin instead of lead. So if you buy pewter of modern origin, likely it will be an alloy of tin, antimony and copper. Take care, though, that if you pay for pewter, pewter is what you get, not an imitation made out of aluminum.

If you have real pewter objects, they may look somewhat like dull silver. Some pewter, though, does take and hold a high polish. You should wash your pewter dishes and tableware as soon after use as possible. Use hot soapy water (never in a dishwasher) and rinse well. Do not leave pewter objects to dry in the air, for that may cause water spots that are hard to remove. Rather, dry them with a soft cloth. That will help them to retain their warm, pleasant appearance, one of the attractive features of pewter.

"LACE of the LAND"

By "Awake!"
correspondent
in Brazil



DO YOU see that woman sitting there, looking intently at something in front of her as her hands dart from side to side? What can she be doing? Shall we take a closer look?

The woman has some sort of pillow or cushion in front of her. But it is what is on top of the cushion that has her full attention. We ask her what she is doing. Her reply? "Making lace of the land."

Because of the way in which it is made —on a pillow or a cushion—this product is also known as *renda de almofada*, or pillow lace. Some call it bobbin lace, hinting at the use of wooden sticks or bobbins in its production.

Why "Lace of the Land"?

Well, simply because it is made here in Brazil's northeastern state of Ceará and is not brought in from other parts of the country or the world. It is a local product. This does not mean, however, that the same type of lace is unknown elsewhere. In fact, similar lace is produced in the Brazilian state of Santa Catarina and in other countries. But handmade "lace of the land" and the lacemaker are so typical of Ceará State that there is a larger-than-life statue of a lacemaker by the side of the new Bank of Brazil building in Fortaleza City.

How did the art of lacemaking get started here? It is believed that the wives of early Portuguese colonists introduced it. They may have learned the craft from the French. Since then, it has been handed down through the generations, mothers teaching their daughters, daughters teaching granddaughters, and so on. For centuries, this method has been so successful that the craft can be termed a home industry. More recently, however, many girls no longer want to learn lacemaking, as they prefer to pursue more lucrative occupations away from home. But let us watch a lacemaker in action.

How Lace Is Made

First, look at the indispensable tools—cushion, thread and bobbins. The cushion is elongated, about 60 centimeters (two feet) long and 30 centimeters (one foot) in diameter, and has a cylindrical shape. It is stuffed with palm straw and is covered with cloth.

Some lacemakers have the cushion on the floor, and they themselves sit on the floor to work. Others put the cushion on a low stool or a chair and work while sitting on a stool or a chair.

The thread generally used is cotton—fine for very fine lace, coarser for heavier lace. It can be any color, but white still predominates.

To start with, a design is drawn on a strip of stiff paper, or a piece of such paper may just have holes pricked into it. This pattern is pinned onto the cushion. Next, pins are put into the holes according to the design. In the case of a pattern drawn on the paper, the pins are put into points of the design. The pins are moved down on the paper as the work progresses.

By the way, you may have noticed that the pins are not ordinary sewing pins. Of course, these could be used, but they tend to rust and therefore are not satisfactory.

Stiff plant spines, thistle thorns or fishbones are more suitable, as they serve the purpose and do not rust.

The thread that is worked around the pins is held on notched sticks of wood, or bobbins, about 15 centimeters (six inches) long, with balls on the end shaped to fit the hand of the lacemaker. Before starting to make a new piece of lace, the lacemaker winds the thread on two bobbins, half on one, half on the other. The number of bobbins she uses depends on the design and on the width of the lace being made; the bobbins may number half a dozen or many dozens. And the length of the particular piece of lace being made determines the amount of thread the woman winds on. Of course, she can splice on more thread if needed, doing so with an almost invisible lace knot.

The lacemaker's skill and dexterity amaze us as she works swiftly, knowing just which bobbin to use next, when to twist it and how many twists to make with it before picking up the next one. Depending on the particular design or pattern, she works the bobbins to intertwine the threads so as to make dainty petals or a chain or a net effect.

To protect the lace and keep it clean, she usually covers it with a cloth. As the lace grows longer, it is neatly folded under this cloth on the side of the cushion away from the lacemaker. Even if the lace becomes several meters (yards) long, it is not allowed to fall to the floor as it increases in length. Only the part actually being worked on is left exposed.

Designs to Suit Every Taste and Purpose

Both fine and heavier lace are made. Also, there is great variety in the designs and the width. This can vary from less than a centimeter (under half an inch) to 10 centimeters (four inches) or more.

And not only straight pieces are made. The lace can have a scalloped edge, or it may be curved. It can also be made in the form of a square or a yoke. Squares and yokes intended for use in blouses can be made either all in one piece or in two halves that are then joined in the middle—so delicately joined, in fact, that only an experienced eye can tell that the pieces were not made all in one. Truly, making "lace of the land" is an art.

Speaking of lace yokes, in shops and markets you can find lovely blouses trimmed with this beautiful lace. Some are lavishly decked with lace, whereas others have less. If you prefer, you can have a blouse made to order. Or maybe you would like a nightgown that is decorated with hand embroidery and delicate narrow strips of lace. Then there are beautiful tablecloths, doilies and bedspreads trimmed with lace or made entirely of lace. Whether

you want something for yourself or are seeking a present for a friend, you will find an article to please you. It is easy to understand why this pretty lace is used so much locally and is in demand elsewhere, even outside Brazil.

Rather than buying a garment, you may wish to buy some of the lace to use in your home sewing. You can purchase it either from someone who makes it or from a retailer. Then, too, you can buy as many centimeters or meters as you wish of the design and width that suit your fancy. Whatever you decide to make, be it a blouse, a dress, a skirt or something else, you can be sure it will be most pleasing to the eye and will win you many compliments if you trim it with some beautiful handmade lace. And, if you ever stop over in Fortaleza City, come and see busy girls and women making the lovely "lace of the land."

That Wart—From Where?

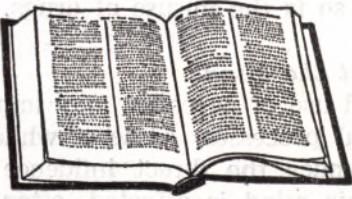
Who, at one time or another, has not been surprised to find a wart developing on some part of his or her body? But do you know from where most warts come?

Doctors who have studied the matter report that common warts are the result of a local infection caused by a certain virus. This virus infects skin cells near the surface of the body and so does not go deep into the body.

But why should a wart suddenly come up at some spot? It may well be that weeks, months or even up to two years ago you had a small injury there. The "culprit" virus could have entered through a small opening caused by a bump, nick or insect bite. Dr. Clete Dorsey, a California dermatologist, reported: "Men with beard warts are careless shavers. They shave too hastily, too often and too close. Usually they shave against the grain to get even a closer shave." In the same vein, some young women who shave their legs develop warts, even hundreds of them. Since warts are a virus infection of the skin, scratching open a wart may lead to other parts of the body being infected. So if a wart needs to be treated, usually it is best to have it cared for by a doctor, who may "freeze" it or cauterize it.

Perhaps one reason why we do not have a wart at every place where we cut ourselves or get bitten by an insect is that the virus may be "killed" by the body's immunological system. For this same reason, one or more warts may suddenly disappear; they may succumb to your immunity system. That is certainly a pleasant development. For while it may be interesting to know from where your wart came, it is even nicer to know that it is gone.

The Bible's View



Why Not Take Drugs?

NARCOTICS, or drugs that alter sensibility, have had a long and varied history. They have even been used for religious purposes. For instance, Dr. Lawrence Stager, associate professor of Syro-Palestinian archaeology at the Oriental Institute of the University of Chicago, has reported:

"At Carthage we recovered poppy seeds, suggesting opium use. That got us looking for more evidence. We soon found that drugs were used in temple rites. In Lebanon, a big jar of marijuana was found in a temple ruin. In Crete a terra-cotta goddess was found with three big opium bulbs sprouting from her head, so the practice of using opium was widespread."

—*Popular Mechanics*, May 1978.

Many may be surprised to learn about ancient religious uses of narcotics. Of course, they probably realize that present-day drug use is globe encircling. In fact, so prevalent is the use of narcotics that some might ask: "Why not take drugs?"

The Same as Using Alcohol?

Some may contend that at least the use of "soft" drugs, such as marijuana, is not wrong. They may reason that the Scriptures permit the use of alcohol, and say that it

also is a drug. Don Phelps of the National Institute on Alcohol Abuse and Alcoholism (in the United States) has stated: "More and more [18- to 21-year-olds] are turning on to drugs and alcohol at the same time. . . . Then they overdose on *two types of drugs instead of one.*" (Italics ours) So, some sources would classify both alcohol and narcotics as "drugs." But can a person really justify the use of narcotics by trying to class them with alcoholic beverages?

Since narcotics are not foods, they have no nutritive value. However, alcoholic beverages such as wine are of some benefit nutritionally. Hence, from that standpoint, there is no correspondency between alcoholic beverages and narcotics.

Narcotic abuse is detrimental to health and may even result in death. Yet, an alcoholic beverage such as wine has some medicinal value. The Christian apostle Paul told his co-worker Timothy: "Do not drink water any longer, but use a little wine for the sake of your stomach and your frequent cases of sickness." (1 Tim. 5:23) Accordingly, while cautioning against overuse of wine, Dr. C. Raimer Smith said: "As a stomachic, it may be used in dyspepsia, anorexia (poor appetite), fatigue, vomiting, senility, etc."—*The Physician Examines the Bible*, p. 138.

While the Bible does not prohibit the moderate drinking of wine or other alcoholic beverages, it does condemn drunkenness. For example, it states: "Do not come to be among heavy drinkers of wine, among those who are gluttonous eaters of flesh. For a drunkard and a glutton will come to poverty, and drowsiness will clothe one with mere rags." (Prov. 23:20, 21) Moreover, the apostle Paul condemned "drunken bouts" as being among unchristian "works of the flesh." And he pointedly stated that drunkards "will not inherit

God's kingdom."—Gal. 5:19-21; 1 Cor. 6:9, 10.

Since the Bible condemns drunkenness, is it not reasonable to conclude that it would be wrong in God's eyes for anyone to get "high" on narcotics? To drink alcoholic beverages in great quantity just to 'drown one's sorrows' clearly would be wrong from a Scriptural standpoint. And this is so even though such beverages can have nutritional and medicinal value. How much more improper it is to seek a state of euphoria by using addictive drugs!

A Thought-provoking Comparison

In some ways, drunkenness and drug abuse are similar. A person who drinks to the point of intoxication may disgrace himself in the eyes of others. Alluding to his unstable, harmful and highly irresponsible actions, the Bible says: "Who has wounds for no reason? Who has dullness of eyes? Those staying a long time with the wine . . . Do not look at wine when it exhibits a red color, when it gives off its sparkle in the cup, when it goes with a slickness [when everything looks red to the drinker and the beverage slides down the throat easily]. At its end it bites just like a serpent, and it secretes poison just like a viper [for alcohol abuse can make one physically and mentally ill, and it can actually kill]. Your own eyes will see strange things [even hallucinations are possible], and your own heart will speak perverse things [as bad motives take control]."—Prov. 23:29-33.

Comparably, a person using narcotics becomes unstable. He is being harmed physically and mentally. Certainly, addiction to narcotics is defiling and therefore Scripturally improper. (2 Cor. 7:1) Moreover, the drug user is very likely to act irresponsibly, to experience hallucinations and to yield to bad motives. Such an in-

dividual can bring disgrace on himself. Hence, just as drunkenness is wrong in God's eyes, so is the misuse of drugs.

What About the Mind?

Continued use of narcotics may impair one's mental processes. At least while a person is under the direct influence of narcotics, his mind is affected, often to such an extent that he is unable to reason properly. It is noteworthy that before Jesus Christ was impaled, "they gave him wine mixed with gall [and evidently also myrrh] to drink; but, after tasting it, he refused to drink." (Matt. 27:34; Mark 15:23) Why did Jesus refuse such wine? Because it was drugged.

Interestingly, Vine's *Expository Dictionary of New Testament Words* comments: "Christ refused to partake of any such means of alleviation; He would retain all His mental power for the complete fulfilment of the Father's will." Just before dying, Jesus did accept *undrugged* wine. (John 19:28-30) His rejection of the drugged wine shows that he desired to be in full possession of all his faculties during his supreme test of faith.

Similarly, followers of Christ should endeavor to maintain control of their mental faculties so that they will retain the ability to shun immoral conduct or other actions that could ruin their relationship with Jehovah God. Also, they are to love God with their *whole* mind. (Luke 10:27) That rules out the use of narcotics in order to produce hallucinations or other mental reactions sought for the sole purpose of experiencing euphoric pleasure.

While the foregoing points do not preclude proper medical use of drugs, they do indicate that godly persons must avoid all drug abuse. Such factors merit serious thought when an individual is confronted with the question, Why not take drugs?

Watching the World



Known for Neutrality

◆ Officials of Lake County, Illinois, have had a problem obtaining locations for their voting booths. The county clerk wants legislation forcing churches and other tax-exempt locations to allow such use of their premises, since many of these have been reluctant. "I can understand if the Jehovah's Witnesses said we couldn't use their church," she said. "I know for a fact that they don't mix politics with religion. . . . That's not the point with these other churches."—*The News-Sun*, September 29, 1978.

Automobile Reversal

◆ For many years U.S. auto manufacturers have worried over the inroads of low-priced imports on sales of their large "gas guzzlers." Now the tables have been turned. American autos have become the low-priced imports in countries where the American dollar has fallen greatly in value. "I can offer American cars that are almost 15,000 marks (\$8,000, U.S.) cheaper than their comparable European models," said a Munich auto dealer. And that city's *Abendzeitung* newspaper says: "Now it's 'in' to drive an American sleigh." In the Federal Republic of Germany, one U.S. auto maker's 1978 sales increased 287 percent over 1977.

"Satan's Atomic Bomb"?

◆ The new drug fad is PCP, called "Angel Dust" by users. But law enforcement and drug officials are calling it "Satan's atomic bomb" and a "demonic new dimension" in drugs. People on the drug will "march into the muzzle of a policeman's gun or a burning house or jump off a skyscraper believing they can fly," says a Los Angeles narcotics squad officer. "It took eight officers to subdue a 14-year-old girl under the influence . . . normalized men in the throes of a PCP trip broke their steel handcuffs." *To the Point International* tells a number of "horror stories": A user, who was calm in a hospital for several hours, suddenly jumped up and bit off a girl's nose; a mother dipped her baby in steaming water; a youth shot his parents as they watched TV; another tried to rape his own mother.

Swimming Pool During

Pregnancy?

◆ Pregnant women should engage in light swimming exercise to ease delivery and eliminate the fatigue they often experience, according to Japanese obstetrician Hajime Murooka. He investigated the matter after noting that women divers had easy deliveries. Murooka had 50 pregnant women take 45-minute swim-

ming lessons three times a week. After monitoring the mothers and fetuses, it was found that the exercise had not harmed them in any way, and most of the women went on to have almost painless deliveries when giving birth.

Reaction to Argentine

Repression

◆ The U.S. White House has been feeling public response to Argentina's actions against Jehovah's Witnesses. In a recent week, "letters on inflation rated seventh," says *U.S. News & World Report*, "outstripped by mail on such topics as private-school tax status, treatment of Jehovah's Witnesses in Argentina and aid to Nicaragua."

Tokyo Safest?

◆ Many have been led to believe that Tokyo is the world's safest big city. However, a Tokyo University researcher says that this is not necessarily true. He claims that a random survey of Tokyo residents indicates an average of 37 times more crimes than are recorded in police statistics. "There are times when policemen are too busy to keep reported cases on record," he said. The survey indicated 54 times more assault and battery cases, 31 times more bicycle thefts and 23.7 times more shoplifting than shown by police records.

Kicking the Habit

◆ Is gradually reducing the number of cigarettes that a person smokes the right way to stop smoking? "Contrary to much popular belief," answers *Science News*, "[University of California] researchers report that gradual withdrawal—cutting down on consumption by half or more—may actually prolong their [the smokers'] agony by intermittently reinforcing their symptoms and smoking behavior. Typically, this chronic state of withdrawal will lead to

relapse . . . craving leads to smoking and smoking leads to craving in a cycle of dependence."

Malaria Vaccine?

◆ Malaria kills about a million Africans each year, and infects 200 million people world wide. Now, a University of Hawaii medical researcher, Dr. Wassim A. Siddiqui, claims 100-percent success in immunizing monkeys with a malaria vaccine that he prepared. He is awaiting the go-ahead to begin trials with humans. However, there will be no quick results, as such trials normally take two to three years, if successful, before the product can be distributed.

Door-to-Door Distribution

Upheld

◆ The Attorney General of Michigan, on September 25, 1978, ruled that state and municipal authorities must respect the constitutional right of citizens to engage in door-to-door solicitation and distribution of handbills and religious tracts, since this is a right guaranteed by the federal and state constitutions. The authorities may not exact a tax or require a permit to exercise this right.

Stealing as a Family

◆ "Whole families are now going out and stealing together," according to Scotland Yard inspector Joyce Crooks. She told a London conference on shoplifting that the trend is growing. Parents have their children do the "dirty work," while they oversee from a safe distance. Children under 10 are too young to be prosecuted. "This is how it can work," she said. "Mother, father, grandmother and grandfather go with the children on a Saturday to a supermarket. Mother and father fill a trolley [shopping cart] which the children wheel 'innocently' past the checkout to a car where the grandparents are waiting."

China Against Smoking

◆ For centuries the Chinese have been among the world's heaviest smokers, leading the world in tobacco production and consumption. But now the Peking government has launched a massive campaign against smoking. It is aimed particularly at the younger generation, since officials recognize the difficulty of getting the older generation to abandon the habit. Two of China's most distinguished physicians are spearheading the anti-smoking campaign.

Pill Dangers

◆ Every day, on the average, about 50 children in Italy poison themselves with pills and medicines left lying carelessly on shelves. Many of them die. United Press International reports that "most Italian houses are bulging with old pills" because few throw away unwanted drugs. More money is spent on pills in Italy than in any other country except the United States, Japan and West Germany.

Airport Living

◆ How does aircraft noise affect those living near large airports? University of California researchers reviewed death and disease statistics for a community two to three miles (3 to 5 kilometers) from Los Angeles International Airport. Compared with a similar neighborhood eight to nine miles (13 to 14 kilometers) away, the death rate from all causes was one fifth higher in the community nearer the airport. "Most striking," says the report in *Newsweek*, "was the finding that cases of cirrhosis of the liver due to drinking were 140 per cent higher among those" near the airport.

TV Commercials and Children

◆ Since children between two and 11 years of age may view as many as 22,000 TV commercials a year, they have

become a potent tool in the hands of advertisers to influence parents' purchases. However, Stanford University researchers have found that a little instruction can promote healthy skepticism even in the very young. "We feel confident it is possible to teach children to become more critical of commercial appeals by showing them how commercials attempt to persuade," said a spokesman for the researchers. Children who viewed films that exposed deceptive advertising techniques were found to be much more skeptical afterward than a similar group of children who did not see the films.

This Is Religion?

◆ In an effort to shore up rapidly declining membership, a Long Island, New York, synagogue has voted to drop its usual \$300 (U.S.) annual dues for new members. "We've got to have younger blood or we'll be all washed out," said congregation president Bernard Green. Another official feared that, without new members, the synagogue would be forced to close or to merge with another. *Newsday* reports: "With more people, he said, services and adult education courses would be more enjoyable and more hands would be available to help in the money-making weekly bingo games."

Reducing Traffic Deaths

◆ U.S. Transportation Secretary Brock Adams recently reported the results of studies on the use of seat belts and air bags for accident protection. He said the fatality rate for autos equipped with automatic safety belts (not requiring driver to buckle) was just one third, and those with air bags one half, of the rate for cars with standard safety belts, which are often not used. He estimated that 9,000 lives would be saved and many thousands of injuries would be avoided by using

these so-called "passive restraints" that do not require operator assistance.

Alcoholism "Bomb"

◆ In Warsaw a Polish scientist stated that consumption of alcohol has gone up to such an extent everywhere that it may become more dangerous to mankind than the atomic bomb. Mikolai Tolkan told an international congress on alcoholism that this alcohol "bomb is already ticking away and few people notice it." He said that alcohol consumption in Poland went up 35 percent in five years. Three million Poles, out of a population of 35,000,000, were said to drink too much every day. The largest five-year increase in alcohol consumption was reported to be in the Netherlands—60 percent. In Montreal, *La Presse* noted huge increases in alcohol use in Canada, adding: "We drink more and more."

Largest Reserve

◆ The world's largest nature reserve has been set aside in Namibia (South-West Africa). The area is about 2,280,000 hectares (about 5,630,000 acres), almost twice the size of America's Yellowstone National Park. To keep the area as unspoiled as possible, no large-scale tourist camps will be allowed. The reserve includes a fish and a bird sanctuary on its western ocean boundary, with mountains, ravines, lush vegetation, waterfalls and deserts inland. The animal population, including mountain zebras, ostriches, leopards, cheetahs, springboks and others, is expected to increase quickly now that they are protected.

For TV-viewing Safety

◆ In a booklet entitled "Consumer Guide to Television Safety," the Electronic Industries Association (in the

United States) provides some TV safety hints. For instance, avoid placing a portable set on a rug, bed or sofa, for this would cover the bottom ventilation openings. Also, do not place sets over heat registers and radiators. Such precautions will help to prevent TV-related fires.

Shopping Malls Popular

◆ There are about 19,000 shopping malls and plazas in the United States. Since the late 1960's a prominent feature has been enclosed malls where climate can be controlled. There are now more than 1,000 of these. Suburban malls have increased because of the movement of population away from cities. The idea of the shopping mall has spread to some 30 countries, with the Soviet Union planning a "supermall" near Moscow in time for the 1980 summer Olympics.

