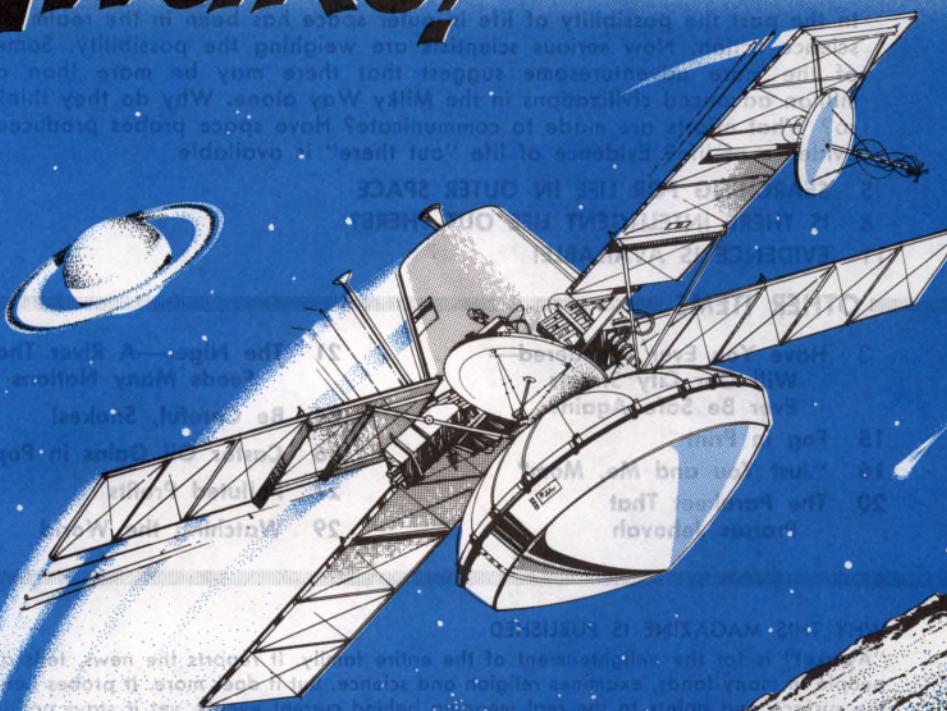


Awake!

FEBRUARY 22, 1981



Searching for Life in outer space

FEATURE ARTICLES

In the past the possibility of life in outer space has been in the realm of science fiction. Now serious scientists are weighing the possibility. Some of the more adventuresome suggest that there may be more than a million advanced civilizations in the Milky Way alone. Why do they think so? What efforts are made to communicate? Have space probes produced evidence of life? Evidence of life "out there" is available

- 5 SEARCHING FOR LIFE IN OUTER SPACE**
8 IS THERE INTELLIGENT LIFE OUT THERE?
11 EVIDENCE IS AVAILABLE!

OTHER ITEMS

- | | |
|--|---|
| 3 Have You Ever Wondered—
Will Our City Streets
Ever Be Safe Again? | 21 The Niger—A River That
Feeds Many Nations |
| 15 Fog in Print | 24 Be Careful, Snakes! |
| 16 "Just You and Me, Mom" | 26 Castor Oil Gains in Popularity |
| 20 The Parakeet That
Praises Jehovah | 27 Polluted Profits |
| | 29 Watching the World |

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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"Have you ever wondered... Will our city streets ever be safe again?"



YOU'RE safer on the battlefield than on our streets," stated a New York City newspaper. It reported that the chance of some New Yorkers' being violently killed was greater than that of American soldiers during World War II. If you live in a large city no one has to tell you how dangerous the streets are.

ARE CONDITIONS GETTING WORSE?

Perhaps you can remember when one could walk the streets at any hour and be relatively safe. But times have changed.

A 1980 poll taken in Toronto, Canada, found that nearly two out of every three women were more afraid to walk alone than they were five years ago. Similar surveys found that six out of ten adults in Barcelona, Spain, and the same percentage of women in the United States, were afraid to venture out at night. The picture worldwide is worsening. News reports indicate "Vicious Crimes Up" on the streets of Japanese cities and an "Upsurge in Crime" in China.

Virtually every measure has been taken to stop street crime—stepped-up police and civilian patrols, better lighting and individual concern.

thought for personal safety—yet the muggings, rapes and robberies surge ahead.

WHAT IS NEEDED?

It is not darkness or solitude alone that makes our streets unsafe. It is people—the muggers, rapists, molesters and others—that make the streets dangerous. If you were sure that only persons who were kind and who had high moral standards walked the streets, would you fear to go out at any hour of the night, regardless of street lighting?

"What is needed to stop crime," stated two doctors after concluding a 15-year study of criminals, "is not so much better housing or conventional therapy, but . . . an offender's 'conversion' to a whole new lifestyle and rigorous moral education. . . . a total destruction of a criminal's personality." Yes, a change in the person is needed.

The Bible well epitomized the needed change: "Let the wicked man leave his way, and the harmful man his thoughts." (Isa. 55:7) But what can make a wicked man change his way, and even his

thoughts? What is powerful enough to convert "a criminal's personality"?

CAN ANYTHING CHANGE CRIMINALS?

The warden of a large city jail, after observing hundreds of criminals, stated: "The Bible's a lot more persuasive than a blackjack." Was his estimation valid? If sincerely applied, can the Bible really change the personality of those who make our streets dangerous?

"I had been arrested more than 40 times for robbery, assault and battery, attempted murder and various other charges," began a 32-year-old prisoner once held in the Angola State Penitentiary in Louisiana (U.S.). While in prison he was contacted by Jehovah's Witnesses and he began a study of the Bible.

"The more I found out about the Bible's truth the more I wanted to learn," continued this previously violent man who thereafter made a complete change in his personality. He qualified to be baptized as one of Jehovah's Witnesses. His changed conduct so impressed the prison authorities that he was allowed to finish his sentence in his hometown jail doing maintenance duty for the sheriff. "Because it has been proven that Jehovah's Witnesses can be trusted, I am allowed on the streets every day."

Another prisoner at Angola State prison who had likewise been assisted by Jehovah's Witnesses to change his former violent personality was asked: "What if someone told you that he couldn't overcome a certain bad habit?" This former robber replied: "After overcoming my temper, a smoking habit and an endless appetite for immoral sex, I could in no way agree with such a poor excuse." Then after reflecting he continued: "The Bible promises real freedom from anything a person may be enslaved to. So if a person really loves Jehovah God,

he can conquer any habit with His help."

These are just two of a number of prisoners earth wide whose personality has been changed by a study of the Bible with the help of Jehovah's Witnesses. These, and countless other examples of former thieves, addicts, rapists, muggers and murderers, are adequate testimony that "accurate knowledge" of God and his purposes can help one to "strip off the old personality with its practices." (Col. 3:9, 10) The truths of God had the power to change depraved criminals into Christians in the first century, and it still has this power!—1 Cor. 6:9-11.

Yet, obviously, not everyone will study and apply what the Bible says.

WHAT IS THE COMPLETE SOLUTION?

"When the wicked ones sprout as the vegetation and the practitioners of what is hurtful blossom forth," warns the Bible, "it is that they may be annihilated forever." (Ps. 92:7) These incorrigible "practitioners of what is hurtful" will be completely destroyed by God, who knows their hearts. This will assure a crime-free world for the future.

But when will such a complete change come? The "increasing of lawlessness" that presently makes our streets unsafe was foretold in the Bible as an indication that the coming destruction of the wicked was near. This and the fulfillment of other Bible prophecies is convincing evidence that we are living in what the Bible terms "the last days."—Matt. 24:3-14; 2 Tim. 3:1-5.

So we shall soon see the destruction of all "practitioners of what is hurtful." The survivors of this destruction will then see the complete fulfillment of this heart-warming Bible prophecy: "Everyone will live in peace . . . and no one will make him afraid."—Mic. 4:4, Today's English Version.



LIfe in outer space. What does that bring to your mind? Do you think of science-fiction novels and films about rocket trips to distant planets, exploring new worlds or communicating with civilizations at the ends of the universe?

Or do you take seriously the possibility of there being life beyond the earth, extra-terrestrial life as it is called? If so, then you may be aware that some scientists believe that the study of life beyond the earth (termed "exobiology") offers the prospect of your enjoying longer life, better health, more peace and vastly increased knowledge.

Today numerous scientists and serious thinkers are devoted to locating or contacting life in outer space, such as on other planets. The report "The Possibility of Intelligent Life in the Universe" to the United States Congress' Committee on Science and Technology stated:

"The age-old concept that man is alone in the universe is gradually fading out. . . . Recent estimates by people of some stature suggest a probability of at least one million advanced civilizations in the Milky Way alone. The process has begun to search for methods to contact these other civilizations."

Why do they feel that there may be other advanced civilizations? Certain scientists reason: "There are millions upon millions of galaxies like our Milky Way, which itself has some 200,000,000,000 stars like our sun. So there must be planets around many of these suns, and advanced civilizations on some

part 1

of them.' Does that seem reasonable to you? The conviction is so strong in some quarters that massive efforts are under way worldwide to discover extraterrestrial life and communicate with it.

What Is Being Done?

If you traveled to Arecibo in the mountains of Puerto Rico, you would find a gigantic telescope operating. No, it is not a telescope with glass lenses or mirrors, nor an eyepiece through which you could look. Basically it is an enormous aluminum bowl 1,000 feet (305 m) wide, with a collecting area of 20 acres (8 ha). This is not an optical telescope, but a radio telescope. It is a specialized form of antenna designed to collect natural radio noises from deep in space. But it could also receive radio transmissions from advanced civilizations elsewhere in the universe, if such exist.

'Hello, out there. Do you read us?'

Though the United States' telescope at Arecibo is exceptionally large, weighing 625 tons, it is by no means the only such device. The Soviet Union, Great Britain and other nations are also listening to outer space with instruments of this sort. They are tuning in to the universe, seeking intelligent messages, even as you tune a portable radio and turn its antenna in a search for your favorite news station. The hope is that not only are there intelligent beings on other planets, but that they are sending messages that we can pick up.

It cost \$17,000,000 (U.S.) to build the radio telescope at Arecibo, and it costs more than \$4,000,000 a year to operate it. If you can imagine the combined cost of such efforts in all lands, you can appreciate that the search for life in space is a serious matter.

But such costs are mere pennies compared to what CYCLOPS would cost. Proposed by United States scientists, CYCLOPS would be a concentrated bank of some 1,500 antennas, each 100 meters in diameter, that could be turned in unison by a computer. It is estimated that this project, covering 25 square miles (65 km²), would cost up to \$20,000,000,000 to build and \$100,000,000 a year to operate.

The zest for contacting life in outer space is not confined to listening. Scientists are also powerfully saying, 'Hello, out there. Do you read us?' They are sending messages into outer space.

Ever since we have had radio and television, some electromagnetic transmissions have been seeping into space. But these transmissions have been designed to reach other points on the earth's surface, not into deep space. So it is felt that even if there were intelligent beings on other planets or in distant galaxies, they probably could not detect and decipher our relatively weak radio and television broadcasts. And given the content of many of these programs, that would hardly be a great loss.

Anyway, serious efforts have recently been under way to beam powerful messages into space. We know that this is possible, for there have been radio and television communications with spacecraft on the moon and with exploring devices sent to Venus and Mars. An exceptional communication effort occurred on November 16, 1974. The radio telescope at Arecibo was turned into a colossal radar transmitter, beaming a message at Messier 13, a star cluster near the edge of the Milky Way, some 24,000 light-years from earth. The message was in a unique code that scientists feel could be deciphered by any civilization technologically advanced enough to receive it.

Yet the messages to outer space have not all been so involved. Pioneer 10, a space vehicle sent toward Jupiter and then on beyond our solar system, had a special plaque attached to it for the information of any extraterrestrial being who found it. The plaque depicted a human male and female, as well as a diagram of the solar system, and the earth as the source of the space probe.

Another such effort was a two-hour copper phonograph record of "earth-sounds" attached to a Voyager spacecraft on its trip through the solar system. The record contained greetings in 50 languages, as well as the "speech" of whales, and sounds such as those of rain, cars and volcanoes. It even included jazz, rock 'n' roll and classical music selections.

Earth-sounds sent on Voyager: Greetings in 50 languages, whale "speech," cars, rain, jazz and rock 'n' roll

Not waiting to communicate with intelligent life beyond the earth by radio, other scientists have concentrated on the more fundamental step of trying to prove that any such life exists.

You may recall the excitement when "moon rocks" were brought back to earth. The question was, Would they give any evidence of living material, or of former life? Alas, they did not. Then attention focused on the planets, particularly Mars.

Though serious scientists had long since dismissed the possibility of finding 'men on Mars,' they did want to search even for microscopic life forms. The Viking I and Viking II vehicles that reached Mars' surface in 1976 contained special laboratories to analyze Martian soil. Mechanical arms reached out, scooped up some soil and brought it into the laboratories. There it

was subjected to long and complicated tests with life-detection instruments. This was a major step in the search for life in outer space.

Why? What Meaning for You?

All this money and all the effort. Why? Is it merely out of curiosity? 'Far from it,' might be the response of astronomers, biologists and even many men on the street. "The most exciting thing we can find in science is life on another planet," says astronomer Frank Drake of the Arecibo project. Similarly, astronomer/biologist Carl Sagan—probably the most widely known and ardent exobiologist—exclaims: "*The scientific, logical, cultural and ethical knowledge to be gained by tuning into galactic transmissions may be, in the long run, the most profound single event in the history of our civilization.*"

But exactly what is to be gained? you might wonder. In his best-selling book *Broca's Brain*, Sagan suggests that advanced technological societies on other planets could offer us the solution to earthly problems: food shortages, population growth, energy supplies, dwindling resources, war and pollution. Sounding even more optimistic, the magazine *Omni* envisions: "*Some advanced civilization might instruct us on how to preserve life, how to avoid disasters and suicide by nuclear war, or by careless destruction of our own earthship's environment. They might even reveal how we could become immortal.*"

It is easy to see why such prospects could generate enthusiasm. But are they distinct possibilities that we can validly consider in connection with the search for life in outer space?

You personally can form your own opinion about the search for extraterrestrial life. Yet you need not just guess. There is evidence that you can consider and that can have a bearing on your future.

MAN'S search for intelligent life in outer space has, in a sense, grown up, become an adult. It has been going on in a concentrated way for some 21 years now.

For example, in April 1960 the National Radio Astronomy Observatory in West Virginia first pointed its cone-shaped ear toward the stars Tau Ceti and Epsilon Eridani to see if radio communications from them could be heard. In 1968, Soviet astronomers scanned 12 nearby stars similar to our sun. Actually, over 1,000 individual stars have already been examined.

And the search is continuing with the massive radio telescope in Arecibo, Puerto Rico, and many others elsewhere.

The search for life in space has proceeded on a different front through numerous rockets launched to the moon and to planets in our solar system—Jupiter, Venus, Saturn and Mars.

What have been the results so far and what indications are there for the future? Is there a basis for your expecting to wake up some morning and hear a news announcement to the effect that intelligent beings on another planet have definitely been contacted? Or has the search for life in space provided reason to believe that we on earth are unique, that there is no intelligent life out there?

At times excitement has run high among scientists manning radio telescopes tuned to the universe.

Once, for instance, Soviet scientists picked up a signal from space that was not mere random radiation or natural radio noise. It gave evidence of coming from a source directed by intelligent beings. And they were right. It turned out to be a signal from a recently launched American spy satellite.

British astronomers in 1968 were excited about a signal they detected. It seemed to be pulsating from and originating in a distant part of the universe. Could it be a coded signal containing an intelligent message? In fact, they had detected a pulsar, that is, a huge star that spins rapidly and thus seems to flash off-and-on radio signals as with a beam shining from the turning light in a lighthouse. Discovering pulsars was a significant astronomical feat, and now several hundred of them are known. But no intelligent message from extraterrestrial creatures had been found.

Thus with all the variety of signals and noises received by radio telescopes, no messages from intelligent life forms in outer space have been detected. The New York Times of June

Is there intelligent life out there?

part 2

26, 1979, observed: "The failure to detect signals and the lack of evidence for long-range colonization by superior civilizations has led some scientists to conclude it is unlikely that such civilizations exist within the Milky Way Galaxy, to which the Earth belongs."

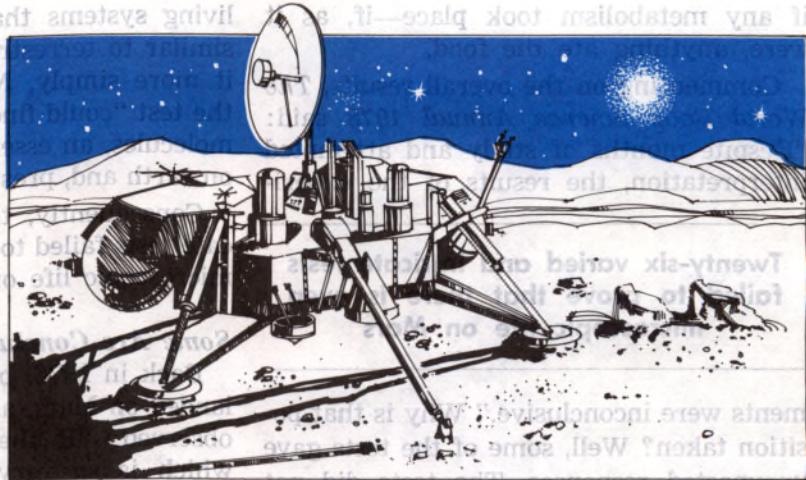
A fundamental assumption of exobiologists—those seeking to find life in outer space—is: There must be millions upon millions of planets around other suns; hence intelligent life surely must have evolved on some of them.

But are there other planets? Maybe yes, maybe no. The fact is that other stars, or suns, are so extremely far away that scientists have not been able to prove whether there are any small planets around them.

David Black of NASA's Ames Research Center said that "there was still no unequivocal evidence for any planet beyond the solar system to which the Earth belongs." And Dr. Iosif Shklovsky, a Soviet astronomer and corresponding member of

to "It looks as though our sun . . . is most likely a rare exception in the stellar world"

the USSR Academy of Sciences, reached a similar conclusion, though having previously been enthused about the possibility of extraterrestrial life. By 1978 he explained: "It looks as though our sun, that strange and solitary star surrounded by a family of planets, is most likely a rare exception in the stellar world."



One can see, then, that it is certainly unwarranted for persons to speak so positively about advanced civilizations on distant planets. They have not even proved that such planets exist, much less that they have advanced civilizations on them.

Microscopic Life Forms

Though advanced beings have not been located, scientists would draw some relief if they could discover even microscopic life forms on the planets in our solar system. This would give a basis for thinking that if life in any form exists on these planets, then there is still the possibility that beyond our galaxy more developed forms of life could exist. For this reason much attention was focused on the life-detecting laboratories carried to Mars by the American Viking probes.

The two Mars probes, Viking I and II, performed 26 complicated tests on soil samples. For example, one experiment exposed some Martian soil to an atmosphere containing radioactive carbon dioxide and carbon monoxide. It was felt that if there were living organisms present, they would convert some of the radioactive carbon into organic material, which could be detected. Another experiment soaked a sample in nutrient solution, monitoring to see

if any metabolism took place—if, as it were, anything ate the food.

Commenting on the overall results, *The World Book Science Annual 1978* said: "Despite months of study and attempted interpretation, the results of the experi-

Twenty-six varied and intricate tests failed to prove that there is even microscopic life on Mars

ments were inconclusive." Why is that position taken? Well, some of the tests gave unexpected responses. The tests did not actually locate any life or even proven organic material. But some scientists have leaned over backwards, clinging to a glimmer of hope that there might be a biological implication to the results instead of these being simply an evidence of unusual chemistry in lifeless Martian soil.

According to the British journal *New Scientist*, one experiment employed a gas spectrometer that is so sensitive it could detect organic molecules even if there were only a few among a million other molecules or even among a billion. Yet, the test failed "to detect organic molecules in the [Martian] soil." Klaus Biemann, spokesman for the team analyzing the results, said that "the absence of organic compounds . . . makes it unlikely that

living systems that behave in a manner similar to terrestrial biota exist." Putting it more simply, *Newsweek* reported that the test "could find no evidence of organic molecules, an essential for the life process on earth and, presumably, anywhere else."

Consequently, the 26 varied and intricate tests failed to prove that there is even microscopic life on Mars.

Some Are Concluding . . .

Back in 1976, before the Viking probes landed on Mars, astronomer Clay Sherrod observed: "If there's no life on Mars—which is so very similar to our planet—then we very well may be alone. We may be unique in the universe."

"We very well may be alone"

Now that Viking I and II are past history, more and more scientists are reaching that conclusion. Dr. Iosif Shklovsky wrote in the Soviet magazine *Sputnik*: "[The evidence] suggests that the assumption that we are the only civilization in our galaxy or even the local system of galaxies, if not in the whole universe, is now much more—not less—valid than the traditional concept of the plurality of inhabited worlds."

Also, astronomer Dr. Michael H. Hart described a computer analysis he made of "hypothetical planets, sketching in the features they would seem to require to produce advanced civilizations like our own." He concluded that, "far from being common, civilized life must be exceedingly rare and the one we have on earth may even be unique."

Are we to conclude, then, that scientific evidence clearly points away from the possibility of any other intelligent life in the universe?

In Future Issues

■ **Keeping Your Job**

■ **The Electric Church Turns On**

■ **When Men Meet Animals**



IN LISTENING to the natural radio noise coming from outer space, scientists have detected something that has caused a great upheaval in their thinking.

We can trace the matter back to 1965 when Arno Penzias and Robert Wilson were working with a 20-foot (6-m) horn antenna at the Bell Laboratories in New Jersey. While studying radiation that might affect communications via satellites, they detected dim microwave signals coming from every direction in the sky. In time it was appreciated that they evidently were listening to leftover radiation. Left over from what? The prevailing theory is that the universe originated in a huge explosion—a “big bang”—and that the radiation all around is a faint glow from that fireball explosion.

“But what bearing does this have on the question of whether there is intelligent life out there?” you may wonder.

This discovery, for which Penzias and Wilson won the Nobel Prize, convinced many scientists that there was an instant of creation. Noted astronomer Dr. Robert Jastrow explains: “Consider the enormity of the problem. Science has proved that the Universe exploded into being at a certain moment. It asks, What cause produced this effect? Who or what put the matter and energy into the Universe?”

Many now admit that science alone will never be able to provide the full answer. But Jastrow and many other scientists grasp the implication: *“Now we see how the astronomical evi-*

Evidence is available!

part 3

dence leads to a biblical view of the origin of the world. The details differ, but the essential elements in the astronomical and biblical accounts of Genesis are the same: the chain of events leading to man commenced suddenly and sharply at a definite moment in time, in a flash of light and energy."

But the Bible does more than ask 'Who put matter and energy into the Universe?' It points to the reasonable answer—the Creator, God. And consistent with Einstein's discovery that energy and matter are interconvertible, the Bible testifies that the Creator is a source of tremendous "dynamic energy."—Gen. 1:1; Ps. 90:2; Isa. 40:26-29.

"Now we see how the astronomical evidence leads to a biblical view of the origin of the world"

Jastrow concludes: "For the scientist who has lived by his faith in the power of reason, the story ends like a bad dream. He has scaled the mountains of ignorance; he is about to conquer the highest peak; as he pulls himself over the final rock, he is greeted by a band of theologians who have been sitting there for centuries." —God and the Astronomers.

Yet there really is nothing bad about coming to accept the evidence of a Creator. A person who is open-minded enough to admit the possibility of intelligence beyond the earth should find no major difficulty in admitting what the Bible says about the living Creator. For example, the Bible informs us that rather than his having a material body of flesh and blood as we do, the First Cause is a spirit. (John 4:24) Thus, even though we cannot see him we can note what he accomplishes, even as scientists cannot see with their eyes the natural radio waves from space but still can receive and measure them.

Moreover, the existence of an intelligent Creator agrees with the wisdom and design manifest in the universe—from the awe-inspiring stars and galaxies to the incomprehensible intricacies of the atom.

Life on Earth—From Intelligence

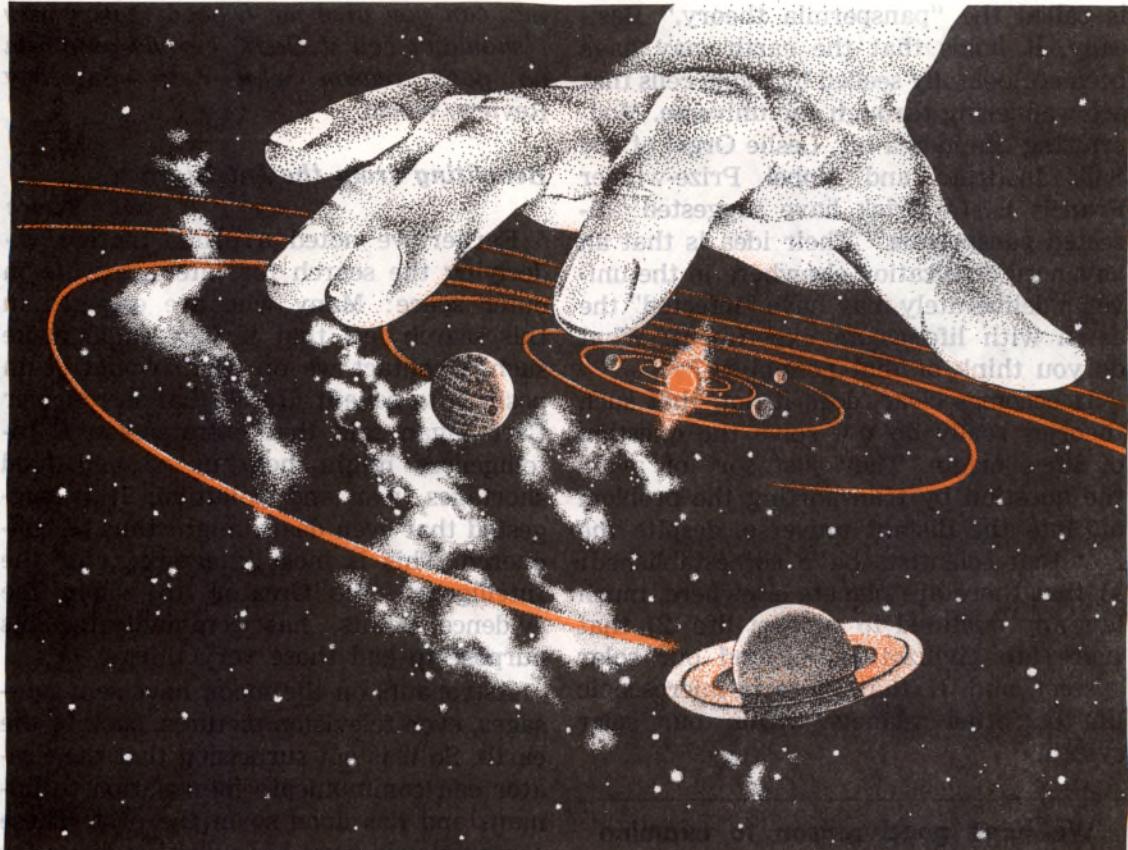
If there were 'intelligent life out there' in the form of a living, wise Creator, that would help to explain significant things about our life here on earth.

The more that scientists learn about other planets in our solar system, and about the universe as a whole, the more they appreciate how precisely designed our earth is for life. In the lengthy article "Life May Exist Only on Earth, Study Says" the New York Times pointed out: "At a distance of 93 million miles from the sun, earthly temperatures have supported life. But if our earth had been slung into an orbit only 5 percent closer to the sun, a runaway greenhouse effect would have turned the planet into something like Venus—a cloud-shrouded planet with temperatures close to 900° F.

"If, on the other hand, we had been only 1 percent farther from the sun when the earth came into being, runaway glaciation would have enveloped the earth, and 1.7 billion years ago our planet would have become a barren desert similar to Mars." —April 24, 1979.

'No planet outside of the solar system has yet been discovered'

Nor is it simply a matter of proper temperature. There are many other necessities for life, including water and the proper atmosphere. A group of 30 scientists attending a University of Maryland meeting on advanced civilizations focused in on what is needed to support life. After admitting that 'no planet outside of the solar system has yet been discovered,' they



noted: "Even if another planetary system is formed, there is no certainty it will produce a solid planet like Earth, which contains nearly 100 elements, including those essential to life."

Also, even if the right conditions prevail, which is so on the earth and no other place that is known, life does not exist automatically. In fact, scientists cannot really explain how life on earth appeared, that is, other than draw the conclusion that it was produced by an intelligent Creator.

The August/September 1979 issue of *Technology Review* called attention to this fact. It admitted that there is "a major gap" between chemicals needed to support life and even the simplest "living systems that could be called protocells." Some

scientists, employing their intelligence, skills and advanced laboratories, have been able to suggest how "prebiotic organic chemicals" (the chemical compounds needed for life) could be present on a primitive earth. "But," the article said, "how to get from there to a living system which can translate, transmit, and act upon information . . . is what M.I.T.'s Alexander Rich called 'the big intellectual stumbling block in the synthesis of life.'"

Where Did Life Come From?

As additional research is done on life, the question looms ever larger, "How did life originate on earth in the first place?"

Some scientists faced with this problem are reviving a theory presented in 1908 by Swedish chemist Svante Arrhenius. It

is called the "panspermia theory." Basically, it holds that the earth may have been accidentally seeded by living cells that are wandering through the universe. Modernizing the idea a bit, Leslie Orgel of the Salk Institute and Nobel Prize-winner Francis H. C. Crick have suggested "directed panspermia." Their idea is that an advanced civilization elsewhere in the universe deliberately may have "infected" the earth with life as an experiment. What do you think of that possibility?

It becomes clear, does it not, that such theories really do not solve the question of life's origin. They just sort of avoid the question by transporting the problem off into the distant universe, despite the fact that scientists have *not* established: 1) that there are planets elsewhere, much less any qualified to support life, 2) that there are civilizations beyond our solar system, and 3) that there is microscopic life on other planets within our solar system.

We have good reason to examine what the Bible says

Furthermore, the modern form of this theory illustrates that, consciously or not, many serious scientists realize that the existence of life must have resulted from the act of an intelligent Being, whom the Bible identifies as God.

In this regard, science editor Albert Rosenfeld relates: "I was chatting about all this with a non-scientific friend, who finally commented: 'As an early reader of the Book of Genesis, I'm somehow not surprised at the idea that Someone Out There put us here. And if such a magical, mysterious, and powerful intelligence exists that is utterly beyond human imagin-

ing, can you give me a good reason why I shouldn't call it God?' I could give him no good reason why not."—Saturday Review/World.

Benefiting from the Intelligence

Out There

Earlier we noted a prime motive underlying the search for intelligent life in outer space: Many who are engaged in this search feel that if they could make such a contact we on earth would be in position to benefit. Recall that astronomer Carl Sagan said that extraterrestrial intelligences might help us to end food shortages, war and pollution. It is suggested that even death might thus be conquered. This is most interesting, for the Intelligence, the Creator, to whom the evidence points, has communicated his purpose to end those very things.

Astronauts on the moon have sent messages, even television pictures, back to the earth. So it is not surprising that the Creator can communicate information to humans and has done so in the past. These communiqués have been written down for preservation and wide distribution; they are found in the Bible.

We noted earlier that Dr. Robert Jastrow concluded that information in the Bible is consistent with recent discoveries made by astronomers. Nor is such harmony between the Bible and science limited to the creation of the universe. (Compare Job 26:7; Isaiah 40:22.) So we have good reason to examine what the Bible says as to when and how the Creator will end pollution, war and even death itself. We urge you to treat your examination of the Bible's information from the Creator just as seriously as scientists have treated their search for life in outer space.

Fog in Print

MANY PEOPLE tend to rate what they read by how "intelligent" it sounds, rather than by how understandable it is. J. Scott Armstrong, a marketing professor at the University of Pennsylvania, recently illustrated this. He asked 20 management professors to rate 10 management magazines that are written with varying degrees of clarity. "Sure enough," says the report in "Psychology Today," "the top-rated journal was the hardest to read; the lowest-rated one, the easiest."

To test whether the more prestigious journals were harder to understand because they tackled more complex ideas, Armstrong rewrote sections to make them more readable without changing the meaning. He broke up long sentences, used simpler words, took out excess words.

One highly rated journal at first read: "This paper concludes that to increase the probability of keeping a [bank] customer in queue, the server should attempt to influence the customer's initial subjective estimate of the mean service time to give him the impression that it is small, or attempt to convince the customer that his time value of service is large."

This was changed to: "You are more likely to insure that a [bank] customer waits in a queue if you can get the person to think that he will not have long to wait. Another way to do it is to get the customer to think he will obtain much benefit by waiting."

Another group, this one made up of 32 professors, then rated four such samples without knowing the sources. "Once again, the professors rated the easy version lower than the more difficult one," reports "Psychology Today." Professor Armstrong summarized the import of his findings by saying: "If you can't convince them, confuse them."

Especially are writers in the fields of law, religion and medicine often guilty of producing fog in print. "What doctors do to English can make an editor weep," writes Alfred D. Berger, managing editor of

"Medical World News." Berger told of a case where a medical student's instructor insisted that she write "diaphoresing profusely" instead of "sweating heavily."

The editor explained that medical jargon becomes a part of a doctor's vocabulary in medical school because of "a natural desire to pick up the lingo of the big guys—the residents and faculty." He continues: "Throw in a certain amount of laziness—it's easier to use an all-purpose buzzword like 'procedure' than to select a more precise word, such as test, operation, method, or technique."

Another factor, Berger says, is a conscious effort to use "vocabulary nonprofessionals won't understand. This makes the users feel wiser and more learned than the nonusers and also lets them talk over the heads of the uninitiated."

Writing in the "New England Journal of Medicine," Dr. Saul Radovsky agrees: "A look at medical journals shows that good science and good writing rarely go together and that easily understood writing is often too much to expect." One example was cited where a researcher wrote:

"We used a chemiluminescence assay to examine the patient's polymorphonuclear leukocyte responses to numerous particulate and soluble stimuli. The patient's polymorphonuclear leukocytes had substantially depressed chemiluminescent responses during phagocytosis of opsonized particles."

What the scientists meant was that the patient's white blood cells were not producing the normal amount of light when attacking foreign substances in the bloodstream.

Clearly, there is little justification for expressing even complex ideas with complicated words. Either the person is trying to impress someone or he is incapable of expressing himself clearly.

"Unless you . . . utter speech easily understood, how will it be known what is being spoken? You will, in fact, be speaking into the air."—1 Cor. 14:9.

"Just you and me, Mom"

Children of single parents:

Can they rise above the difficulty?

How can they help create a happier home?



MY FATHER left us and my mother has been very ill. She is better now, but we are having it bad. We need a father, for we barely make it. Sometimes we have little or no food because most of the money is used for bills and repairs around the house. I hate to see my mom so lonely. Just what is

going to happen to us? We are scared."

This painful letter was an urgent plea from a 14-year-old boy who became one of the millions of youngsters raised by a single parent.

Unless you personally have experienced the situation, you cannot fully imagine the trauma to a young mind when suddenly one parent is gone—perhaps forever. Though many families lose a parent because of death, the vast majority are made semiorphans because of either desertion, divorce or separation. It is estimated that 40 percent of all children now alive in the United States will spend some of their lifetime in a single-parent family. The scene worldwide is worsening.

For a youth to overcome the problems of this situation, which one youngster describes as "a wall of frustration, hurt and anxiety," is a real challenge. What can he or she do to cope with this new circumstance? If the child turns bad, is it always the parent's fault? How much control does such a youngster have over his own destiny? The following true-life experiences may help you to find the answers to these questions.

What Can Make Matters Worse?

"If I can't do it, then I'll just go live with dad—he'll let me!" threat-

ened one teenager when his mother disciplined him. Such threats are not unusual. One 14-year-old girl openly admitted: "I have more freedom, too. Dad lets me do more things than mom did. . . . Mothers sometimes just try to raise you the way they think is best, but fathers will let you be more the way you want to be." Of course, this is not always the case.

However, does 'being the way one wants to be' bring genuine satisfaction? Many youngsters, without thinking, will shout "Yes!" So did one 16-year-old who later learned differently.

This boy's parents were divorced, and the mother was given custody of him and his brother. The Christian mother was firm and set down "house rules," including a curfew, and required the boys to obey these. But the 16-year-old felt that mom was too strict. He wanted freedom, so he left. He moved in with his father who immediately showered him with material gifts—a new car, a new watch and other things. He had his freedom. But soon this newfound freedom brought problems.

The moral principles he had previously held high were lost. His sexual promiscuity led to a vicious fight with a jealous boyfriend. He ran away several times because of the tension in the home of his father, who had now remarried. In a rush to get away from this tension he hastily married, and along with his young wife engaged in a life of constant partying. Nearly every night they would barhop. He was certainly 'being the way he wanted to be.'

One night while sitting in a bar, he began to take a serious look at himself, what he had become. "What

am I doing with my life; what's happening to me; where am I really going?" he thought. Soon his wife deserted him. His life fell apart. Realizing where there was security, he returned to his mother's home, now willing to live by those same rules that he had chafed under before. He now realized that they were for his own good. Happily, he recognized the truth of the Bible proverb (29:15): "A boy let on the loose will be causing his mother shame."

Real Sons and Daughters

A 16-year-old girl in Bogotá, Colombia, proved to be a real daughter. Her father deserted the home when she was three, and her mother struggled, without any material support from the man, to care for little Yvonne's physical and emotional needs, as well as trying to instill Christian principles within her. At 13 the girl was stricken with a paralyzing disease. Yet, with her mother's care, she recovered. Then, suddenly, when she was 16 the father reappeared—now a successful businessman.

Immediately, he began legal proceedings to gain custody of the girl. Yvonne and her mother were called to court, where the father charged: "She has neglected my daughter's welfare and her education!"

"When I was sick and needed treatment, where was my father?" answered Yvonne mildly. After reflecting on the moral principles her mother had taught her, she continued: "My mother has given me the finest education I could ever have."

"But I want to give my daughter all the advantages she needs to have a happy life," pleaded the father. He added, "She can have a full college education in the career of her choice, fine clothes, parties, social contacts—all she needs to be successful. And I have the means to provide it."

Quite an offer! Certainly the mother was in no position to compete—peso for peso. "Look what you're denying your daughter!" snapped the judge as he glared at the helpless mother. "Yvonne is a big girl now. She can make her



own choice," responded the mother. "If she wishes to go with her father, I will not stand in her way."

Without hesitation Yvonne spoke up: "I appreciate what you want to do for me, father, but my life with mother is already very happy and satisfying. I have all that I really need materially." Then, pondering over her own life's work of aiding others spiritually full time, she said: "But far beyond the material things I have, I now have a genuine purpose in life. This is something money just can't buy." Tearfully, the mother embraced her daughter as the father dropped his claim and stormed out of the courtroom.

In Detroit, Michigan, U.S.A., a fatal accident left a Christian widow alone to care for three teenage girls. One of these is a completely helpless paralytic.

How would you feel if you had to hand-feed an 18-year-old, change her diapers, bathe and dress her, as well as carry her back and forth to religious meetings? It is no easy task, and the father had previously been a great help to the mother. Would the mother now have to give the girl up to some institution to care for her?

"We'll take care of her, mom," was the response of the other daughters. And that's just what they did. "I've been able to keep the girl

simply because of the help of my other two children," said the mother. There are many other examples where children of single parents have cared for household chores and substantially supported their parents. Not only does the parent benefit, but a leading child psychologist, Dr. Lee Salk, reported how the child also profits: "Some single parents have been very successful . They will say, 'I've got so many things to do today that it would be a big help if you could set the table when you come home from school. And maybe you could also go around to the store and get some tomatoes and eggs and a loaf of bread—that certainly would make things a lot easier for me when I get home.' Children love that sort of thing. It makes them feel important. They gain a great feeling of self-esteem from doing something that makes their parent's life a little easier, and from being appreciated for it." Thus life for both the child and the family is improved.

No youngster likes to be thought of as a baby. Though perhaps young in years, most children like to feel that they are becoming more adult in their thinking.

Children of single parents frequently grow up faster emotionally than those with two parents. Why is this often so? In the magazine article "Divorce: The Positive Side" writer Jane Adams states: "The children of divorce are forced to be independent—one parent simply cannot be as attentive, available and helpful as two. . . . I know that both my children—in their early teens—can prepare a fairly nutritious meal. Both can help keep the home we share running smoothly and tackle chores from dusting to washing and ironing their

own clothing, to fixing a broken window. They clean up after themselves because they have to—there's no one else to do it."

As they mature in their thinking they become especially helpful to their single parent. For instance, one Christian divorcee was faced with rearing five boys and a girl. Though she was cared for financially, problems began to develop. "I was more lenient with the kids because I felt I was in competition with their father who had visitation rights. I didn't want to lose them," she admitted.

But one of her sons stunned her by saying, "Mom, you're spoiling the kids! Mom, just look how they're acting—they need the 'rod.' You have to be firm. Your 'Yes' has to be 'Yes' and your 'No,' 'No.'" Such grown-up advice was quickly followed, and what a difference it made in this home!—Prov. 22:15; Jas. 5:12.

Those youngsters who 'put away the traits of a babe' by maturing in their thinking and conduct always look back thankfully in later years. At the age of four one of these lost his father in death. It was during economically hard times and many wondered how the mother would cope with rearing 11 children alone!

—1 Cor. 13:11.

Relatives came and were prepared to divide up the children to care for them. "No," said the somewhat proud mother, "we will all stay together, even if we have to starve together!"

"I look back on this experience in my life," wrote the now grown-up four-year-old "and I realize that it was one of the most outstanding events that ever happened to me. We as a family started pulling together so we could survive."

At first they made sandwiches and snacks and, after obtaining permission, sold these at train stations. Finally, the mother established a small restaurant. The previously mentioned son said, "I well remember the times when someone would come into the restaurant and want an egg sandwich and I would be sent out of the back door to go to the grocery store to buy one egg."

Now this Christian man not only has successfully reared his own family but is a founder



of a multimillion-dollar business chain. Reflectively, he wrote, "I thank God for such a wonderful mother."

Known by Your Own Practices

The preceding examples certainly show that children of single parents need not be just helpless victims of their difficult circumstance. Though without question the loss of a parent can and does have a dramatic effect on a child's life, many youngsters agree with the proverb (20:11): "Even by his *practices* [not by the status of his parents] a boy makes himself recognized as to whether his activity is pure and upright."

A so-called broken home does not have to warp a child's life. Youngsters who reach out to help their parents and respond to proper moral direction and discipline from such a parent can be successful in life. Not only will they have self-esteem, but they will also develop the inner peace of mind that is so critically missing among many youths today. Such ones can contribute to a warm family life. By their actions they can truly say, "Just you and me, mom—but together we can build a rich and meaningful life."

The Parakeet that praises Jehovah



"ONE DAY I decided to buy a little parakeet. It would be company for my husband, Wally, when I was at the Kingdom Hall of Jehovah's Witnesses, attending their meetings in Palm Springs, California. It was only five weeks old when we got it, and we didn't know whether it would talk or not. Also, we couldn't settle on a name for it, so I just called it 'Pretty Baby.' After one month we heard it say, 'Pretty Baby.' We had a talker!"

"I tried to teach Pretty Baby to say, 'Praise Jehovah.' Wally told me I was wasting my time: 'He'll never be able to say "Jehovah." That's too hard.' But one day it did say, 'Praise Jehovah.' Later it learned to say, 'Come, you people.' Then I taught it to put the two together: 'Come, you people, praise Jehovah.' Wally shook his head. 'I never would have believed he could put the two together, since he learned them separately.'

"Next I taught Pretty Baby to say, 'Are you Jehovah's witness? Are you, are you?' We manage a hotel in Palm Springs, and soon Pretty Baby was asking the people,

'Are you Jehovah's witness? Are you, are you?' It also learned to say, 'Preach the Word! Preach the Word!' One of its most interesting proclamations was, 'First John 4:8, God is love. Look it up! Look it up!'

"Guests come into the office to register, and when Pretty Baby talks they are startled and exclaim, 'Is that coming out of that bird?' Wally replies, 'Oh, yes. He even quotes scripture and says, 'First John 4:8, God is love.' My wife is one of the Witnesses and she taught him.'

"One day a woman guest came into the office and heard the bird say, 'First John 4:8, God is love. Look it up! Look it up!' She was so amazed that she went to her room to look it up. I had replaced the Gideon Bible in the rooms with the "New World Translation" Bible, and later at the pool she said to me: 'I really enjoy that Bible. It's so easy to understand. Could I leave a donation and take it with me when I leave?'

"I replied: 'No. Leave that one in the room. Come by my home later and I'll give you one.' Later she came by to get the Bible, and left with 14 of the Watchtower Society's publications that explain the beliefs of the Witnesses.

"The parakeet became the talk of all the guests. One day a woman came into the office and said that as she was by the pool she heard one man say to another: 'Do you know that the manager has a bird that says, "Praise Jehovah"?' The other man said: 'You're kidding! Do you think he would let me see it?' Because of the bird, everyone soon learns 1 John 4:8. If Pretty Baby is quiet, Wally sometimes says to it: 'You didn't praise Jehovah today. Come on, say it!'

"The 148th Psalm is a call for all creation to praise Jehovah—heavens, earth, plants, animals, people, and 'winged birds.' (Verse 10) Like all creation, Pretty Baby does it by his intricate and marvelous design—a reflection of the Great Designer's wisdom. And by its words."—Contributed.

The Niger

a river that feeds many nations

TO A traveler in a low-flying aircraft, the Niger River appears like a broad ribbon woven intricately into the contours of West Africa. Its rapids and waterfalls seem like delicate frills of white lace adorning the ribbon, and the tributaries like slender streamers of green, gray and brown.

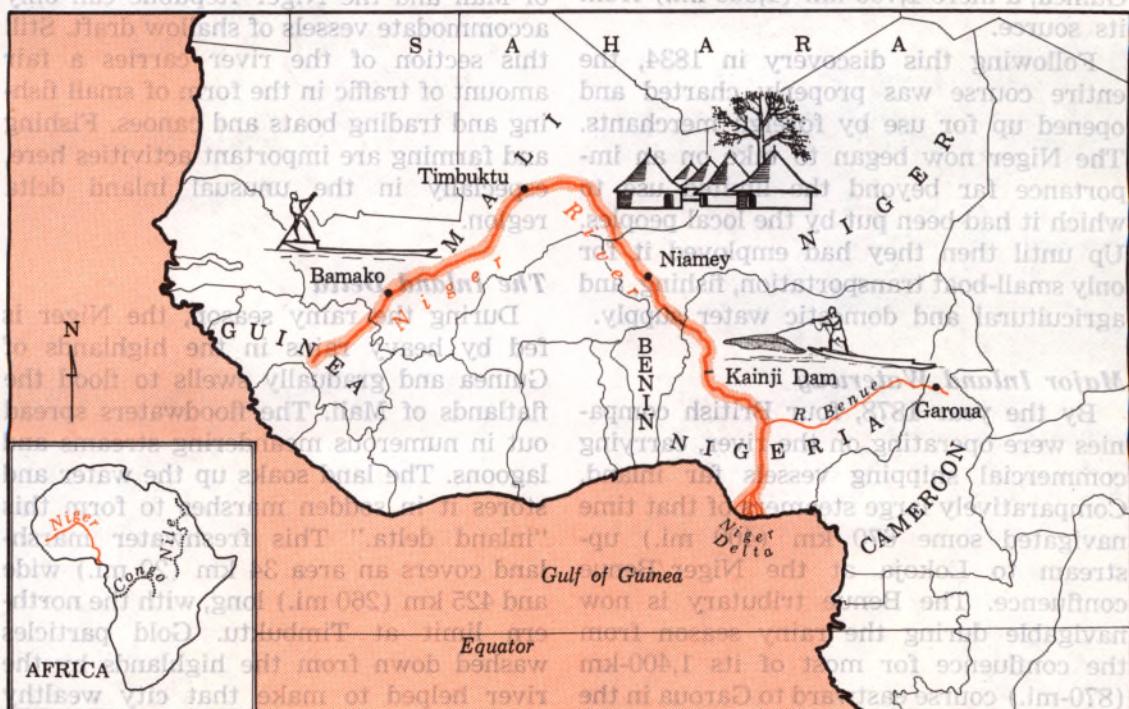
But to the five nations whose land it drains and waters, and the more than 20 tribes who feed and make a living from its waters, the Niger is far more than an adornment. It is essential to their very existence.

There are schemes for its increased use. Nigeria has projects to develop river transportation far beyond what

exists at present. There are river basin development projects to increase irrigation for agriculture and livestock. In these and other ways, the people of Nigeria, Niger Republic, Mali and, to a lesser extent, Guinea, the Republic of Benin, and even Cameroon look to the Niger for even greater advantages in the future. This is the outgrowth of a development that started some two hundred years ago.

Throughout the centuries, the local peoples, merchants and explorers made use of the river in a number of locations. Yet, until the 19th cen-

Opening the River



tury, no one succeeded in tracing it all the way to its source.

By the end of the 18th century, it had been established that the river had its source in the highlands of Guinea, only 360 km (220 mi.) from the Atlantic coast, and that from there it flowed inland. Early explorers followed its northeastward course through lush tropical forests of Guinea to Timbuktu. They found that it continued east and southward in a wide loop across vast stretches of savanna and the arid sand dunes of the southern Sahara. This led geographers to wonder if it was a tributary of the Nile or of the Congo. Some thought it was the Congo itself.

After several expeditions, explorers finally followed the entire course of the river right to its outlet to the sea. They discovered that, after flowing for 4,200 km (2,600 mi.), the Niger enters the Atlantic Ocean through a bewildering maze of creeks that form its delta in the Gulf of Guinea, a mere 1,700 km (1,000 mi.) from its source.

Following this discovery in 1834, the entire course was properly charted and opened up for use by foreign merchants. The Niger now began to take on an importance far beyond the limited use to which it had been put by the local peoples. Up until then they had employed it for only small-boat transportation, fishing, and agricultural and domestic water supply.

Major Inland Waterway

By the year 1878, four British companies were operating on the river, carrying commercial shipping vessels far inland. Comparatively large steamers of that time navigated some 670 km (400 mi.) upstream to Lokoja at the Niger/Benue confluence. The Benue tributary is now navigable during the rainy season from the confluence for most of its 1,400-km (870-mi.) course eastward to Garoua in the

Cameroon Republic. However, the draft of vessels that can navigate these distances varies seasonally with the volume of water in the rivers.

The river traffic contributed to the development of a timber industry and extensive oil palm and rubber plantations in Nigeria. It also provided a comparatively easy and cheap outlet for other exportable agricultural produce from the northern hinterland, and the bringing in of imported materials.

Due to growing demands for cheap transportation, plans are under way to make full use of the great transportation potential of the Niger/Benue river system. Annual transportation demands are expected to increase from the present 1.5 million tons to more than 6 million tons by 1985. To meet this demand, there are projects to improve the navigability of the system and to provide adequate river ports and places for efficient handling of freight.

The shallower waters in the desert plains of Mali and the Niger Republic can only accommodate vessels of shallow draft. Still this section of the river carries a fair amount of traffic in the form of small fishing and trading boats and canoes. Fishing and farming are important activities here, especially in the unusual inland delta region.

The Inland Delta

During the rainy season, the Niger is fed by heavy rains in the highlands of Guinea and gradually swells to flood the flatlands of Mali. The floodwaters spread out in numerous meandering streams and lagoons. The land soaks up the water and stores it in sodden marshes to form this "inland delta." This freshwater marshland covers an area 34 km (20 mi.) wide and 425 km (260 mi.) long, with the northern limit at Timbuktu. Gold particles washed down from the highlands by the river helped to make that city wealthy

and famous in the Middle Ages. Although panning for gold is now of negligible importance, the waters still provide good irrigation and excellent fishing grounds.

Rich rice fields flourish there in the marshlands. The overflow of water during the flood season provides natural irrigation for the fields of other grains, like millet and sorghum. Yet canals such as those being used in Nigeria are not employed here. Water is carried in bowls made of skin, or in other containers, to fields that are beyond the marshlands. Attempts to introduce modern irrigation were hampered by centuries-old agreements on land and water ownership. Furthermore, distribution of water by canals increases the risk of spreading waterborne parasites.

Fishing Grounds

Fishing is a major occupation. During the flood season fish, like the large capitaine, or Nile perch, leave the main streams of the river and spawn in the marshes. When the waters recede during December to March, the fattened fish are left to flounder in the shallow waters. It is then easy for fishermen to pick them up or to catch them in enormous numbers in their traps.

Of course, it is not only in this inland delta that the river supports a thriving fishing industry, just as it is not only here that the river is vital to the survival of plantations and cattle. All along the course of the Niger fishing is an important occupation of the people. However, the Kainji Dam at New Bussa in Nigeria is outstanding in the development of the fishing industry. The primary purpose of building the dam was to provide a constant water supply to feed the huge Kainji hydroelectric plant that supplies electricity to Nigeria and the Niger Republic. As anticipated, this artificial lake, which covers nearly 1,300 km² (500 square

miles) has become a major fishing ground. A similar project is now proposed near Lokoja, southeast of Kainji. This would provide for another large hydroelectric dam and create a large lake with potentially rich fishing grounds.

The Coastal Delta

Where the river loses itself in the most complex delta system in Africa, once-remote towns and villages are taking on importance. This is an oil-rich area, yielding petroleum in quantities that have placed Nigeria among the world's top 10 producers. As a result, people in this area inaccurately speak of oil as the river's second liquid gift.

Among the network of creeks, the Ijaw-speaking people virtually live in the water. The creeks are their roads and the canoes are their cars. As with the people of the inland delta, fishing is their chief occupation. When the men bring in large supplies of fish that have been caught in basketlike traps, the expert oarswomen take to their canoes. They become the "fish women," bringing fish to water-side markets or to people who live in the houses that rise out of the water on long stilts.

This is also an area where the raffia palm grows in profusion and is rated as very valuable. It provides the people with material for building houses and for making brooms and mats. As a bonus, a local gin is distilled from the sap drawn from the heart of the tree. It is no wonder that when the oil companies buy swampland, they pay dearly for the trees as well.

So the Niger is indeed a river to which people look for a living. It quenches the thirst of the parched ground and adds a ribbon of beauty to the arid land. Development projects aim to establish it even more firmly as important to the economic growth of the nations through whose territory it flows.

Be careful, Snakes!

By "Awake!" correspondent
in the Philippines



RECENTLY, while workers were excavating an ancient walled city in Manila, they found an old cannon still loaded with live ammunition. Suddenly, the workers scrambled out of the excavation. Because of the cannon? No, because they had found a pile of snakes' eggs, and parent snakes sometimes stay near their eggs until they hatch! The cry went out, "Be careful, snakes!" The workers feared the snakes more than the loaded cannon.

Unless you live in Ireland, New Zealand, some isolated islands, or areas of permanently frozen subsoil like the Arctic, there are snakes in your country. But the greatest profusion is in the tropics, and in the Philippines they are very common. However, of the almost 3,000 known varieties fewer than 200 are dangerous to man.

Examination reveals snakes to be a valuable part of the creation, albeit one to be treated with caution. They come in all sizes, from a slim six inches (15 cm) long to a bulky 40 feet (12 m). They are cold-blooded, meaning that their body temperature changes with the temperature of their surroundings. They are not slimy to

the touch. Rather, their shiny scales feel dry and tough.

Watching a gymnast, you may be impressed with the suppleness of the human body. But, while our backbone may have 33 or 34 vertebrae, a snake may have over 300. One snake had 565! Hence, it can twist itself into amazing positions. Each vertebra has a pair of long, movable ribs attached. The snake moves along by the concerted action of these ribs and its

scales. Usually its speed is about two to three miles an hour (3 to 5 km/h), but running men can be hard pressed to stay ahead of some snakes known as "racers." The snake's diet does not sound appealing: earthworms, insects, fishes, frogs, birds, other snakes or mammals—especially rats and mice. But that is what they like. Because of the way their jaws are joined together by elastic ligaments, snakes can swallow whole objects wider than their mouths. Like us, they like to eat regularly, but unlike us, they can get along on just three or four big meals a year. In fact, some snakes can fast for a whole year and survive.

The Snake's Senses

Our impressions of the world depend largely on what we see, hear, taste, smell and touch. What about the snake? Well, it can see also, but not too clearly at a distance. It quickly notices sudden movement, however. Some question whether it can hear, since it has no external ears. Researchers stimulating the snake's auditory nerve were able to detect electrical impulses, indicating that it can.

Also, it is sensitive to ground vibrations. Can a snake smell? Yes. In fact, male snakes recognize females by means of smell. Additionally, the snake's forked tongue is a remarkable piece of equipment. This flicks around picking up minute particles from the environment, which go into tiny cavities in its mouth. These cavities are linked to the smell organs. By this means, the snake can follow a cold trail where the scent would be too faint even for a bloodhound.

The pit viper has another remarkable ability. The "pit," which is a peculiar depression between the eye and the nostril in this snake's head, is highly sensitive to heat radiation and air vibrations. With it, the viper can trail and strike a warm-blooded prey even at night. The pit viper is also unusual in that its fangs are not permanently erect. Normally, they fold into its mouth, but when the snake strikes, it moves them into an attacking position and strikes with a stabbing motion that enables it to penetrate clothing. These two characteristics make the pit viper one of the Philippines' more dangerous snakes.

Be Alert

Most people living in tropical countries have had experiences with snakes. In the Philippines, the most dangerous is probably the cobra, because it often lives near people and is ill-tempered.

For example, one morning a 14-year-old boy came downstairs to his father's store and stepped on a Luzon cobra! The snake reared up to strike. Its mate rushed from a nearby crate of bottles to join the attack. With the snakes chasing, the boy ran behind some sacks of rice and finally escaped outside. Eventually, the cobras were cornered. In furious defense, one spat and hit a pursuer on the forehead with its venom. It was aiming for the eyes. Cobra venom in the eyes is very painful and can damage the eyesight unless washed out

immediately. Finally, both snakes were killed.

Another time, a Samar cobra visited an assembly of Jehovah's Witnesses. It was doubtless attracted by the cool, shaded grass under the speaker's platform. After the assembly, many delegates crowded around the platform to take photographs of one another. They were still there when workers began to dismantle the platform. The cobra was disturbed and angrily reared to strike. One of the delegates, a Mansaka tribesman, on hearing the movement, quickly seized a piece of wood and killed the snake.

We have another, less common cobra in this country: the king cobra. This has the dubious distinction of being the world's largest poisonous snake. This cobra, too, is fierce and aggressive.

On the other hand, the sea snake, although poisonous, is usually gentle and inoffensive. Once, while on a trip to Samal Island, some vacationers found one swimming along with them. It was put in a jar and shown around to everyone. Then it was released. These gentler snakes, often gold and black, live in shallow coastal waters.

Be Sensible

Snakes usually do not attack unless provoked. Hence, a sensible person can generally avoid them. It is good not to walk without protective clothing through areas known to have snakes. Many are bitten when they tread with bare or sandaled feet on snakes hidden in the grass, or when they pick up a snake along with an armful of grass.

But what happens if, in spite of being careful, someone gets bitten? Well, first of all, don't panic. Remember, most snakes are not poisonous. And even if someone is bitten by a venomous snake, all is not lost.

There are two basic ingredients in snake

venom. One, called *hemolytic*, attacks the lining of blood vessels and breaks up blood corpuscles. The other, *neurotoxic*, attacks the nerve centers, especially those connected with breathing. Of those bitten by predominantly neurotoxic snakes—like the cobra—three out of five have no significant poisoning at all, and it is by no means inevitable that the other two will die. Even in the case of snakes with the more dangerous hemolytic poisons predominating, one out of five victims bitten is not severely poisoned.

How should a snakebite be handled? Well, first lay the patient down. Give him no alcohol and keep him as still as possible. If the bite is near an extremity, tie a band firmly on the side of the bite nearest the trunk of the body. This band should be tight enough to retard the blood flowing back through the veins to the body, but not so tight as to block the deep-lying vessels. Loosen the band for a minute and a half every 15 minutes.

Then get the patient to a doctor imme-

dately, especially if you see large prominent teeth marks beside the circle or circles of small dents. This usually betrays a venomous snakebite. If possible, kill the snake and take it with you to help the doctor identify it.

Snakes Are Not All Bad

The few poisonous varieties of snakes tend to make people overlook the good qualities of these reptiles. For many, they are a source of food. Their skin can be useful for leather, and snake venom is used to produce anticoagulants and pain relievers. Possibly their greatest contribution is in rodent control. Rats and mice—which damage vast amounts of food-stuffs—are a prominent part of their diet.

Meanwhile, excavations continue at the ancient city of Intramuros. The diggers have uncovered many ancient chambers and tunnels. But you can be sure that, as they penetrate these links with the past, they remember the warning: Be careful, snakes!

CASTOR OIL GAINS IN POPULARITY

FOR many centuries castor oil has been used as a medicine. But it has never been very popular with the patients!

Today, however, only about 1 percent is used medicinally. On the other hand, would you like to have a dress that feels smooth and that is free from static cling? Such fabrics are made from castor oil. The oil that once brought upturned noses is also found in fine soaps, lotions and creams. Its low freezing point also makes it ideal for a lubricant in cold climates, and the fact that it does not burst into flames until it reaches 270° Celsius (518° F.) has made it an ideal lubricant for jet aircraft. You may find that it has been used to rust-proof your car, or for any of scores of other uses—all of which are much easier to take than a swallow of castor oil.

Polluted Profits

"Your gold and silver are rusted away, and their rust will be as a witness against you."—James 5:3.

"Unnecessary Deaths"

CIGARET marketers are focusing on the Third World, where they rarely have to print the health warnings that curb sales elsewhere. They dump lethal substandard tobacco on unsuspecting buyers while the local media, eager for tobacco advertising, keep awareness low. Cigaretts sold in the Third World usually contain twice as much cancer-causing tar as identical brands elsewhere."—*World Press Review*, April 1980.

The tobacco industry began to eye the third world countries as a vast untapped market when sales sagged in North America and Europe. Aggressive advertising followed that was designed to create and exploit a demand in these countries. It has proved to be tragically effective. Per capita cigarette consumption between 1970 and 1980 rose less than 4 percent in the United States, but it soared 33 percent in Africa and 24 percent in Latin America. Each year between 1971 and 1974 the average value of tobacco exported by the United States was \$650 million. By 1979 the figure had shot up to \$2,150 million.

Tax Dollars Contribute to Unnecessary Deaths

The money of American taxpayers has shared in the growth of tobacco

consumption and exporting. In 1979 alone more than \$337 million in tax money was spent to encourage domestic tobacco production. Not only does the government use tax dollars to subsidize the growth of tobacco; it uses that money to buy some of the surplus. Millions of tons have been shipped to less developed countries as part of the Food for Peace program. Food for peace? Tobacco is food to relieve starving millions? Nonsense!

As late as 1977 more than 13 million metric tons with an estimated value of \$55 million was sent abroad by the United States. U.S. tax dollars support the World Bank and the United Nations Development Program, and those institutions finance projects to expand tobacco cultivation overseas.

In the United States the government demands that cigarette packs carry the warning that cigarettes are hazardous to people's health, but it encourages and finances cigarette consumption in third world nations. The *New York Times*, April 13, 1980, comments on the result: "The stage is being set for a new epidemic of smoking-related diseases in the less-developed nations."

And the *World Press Review* article quoted in the opening paragraph comments: "Joseph Califano, former

U.S. Secretary for Health, Education, and Welfare, told a WHO [World Health Organization] meeting in Stockholm that to young people 'the invitation to "Come to where the flavor is" is a ticket to the cancer ward.' The WHO Expert Committee on Smoking was more blunt: 'The international tobacco industry's irresponsible behavior [directly] causes a substantial number of unnecessary deaths.'

"The Valley of Death"

POLLUTION is bringing death even before birth to lives in a city in Brazil.

As a result, it has been called "the valley of death." Cubatão is intersected by four rivers, but all of them have become dead rivers. The city itself lies under a venomous mist. Daily the 50-square-mile area has dumped upon it 473 tons of carbon monoxide, 182 tons of sulfur dioxide, 148 tons of particulate matter, 41 tons of nitrogen oxide and 31 tons of hydrocarbons. In 1977 in one slum area surrounded by three of the city's 24 industries, a pollution monitoring machine broke down under the intensity of the contamination.

One of Cubatão's lifeless rivers billows with the suds of detergents. Another boils from the effect of the chemicals poured into it. A third river is so hot that its course is marked by the steam rising from it. Fish taken from the nearby ocean outlet have been found blind and deformed from ingested mercury. There are no birds, no butterflies and no insects of any kind. When it rains, it is acid rain that burns the skin.

Of every 1,000 babies born, 40 are dead

at birth and another 40 perish within a week. Most of these victims are deformed. The number of stillbirths and deformed fetuses has increased dramatically. The average weight of normally born infants has decreased markedly. Of 40,000 emergency medical calls, 10,000 were for tuberculosis, pneumonia, bronchitis, emphysema, asthma, and other nose and throat ailments.

Those Who Can, Commute

The mayor of this city of 80,000 refuses to live there. A group of state functionaries left when they were refused the gas masks that they had requested. Of the 55,000 workers in the city, only one third live there—they can't afford to move. Although the industries have given the city the highest average per capita income of any city in Brazil, the profits are not spread out equally. Thirty-five percent of the workers live in shantytowns with no social services. Typical worker communities have many small rundown cabins with a cot inside known as a "hot bed." By day a night worker sleeps in it, by night a day worker occupies it.

The managing director of one of Cubatão's steel companies observed that flagrant pollution by industries is no longer accepted by the highly unionized workers of so-called developed countries. "In view of these considerations," he said, "the iron foundry is an activity more suitable to third world countries."

Apparently the policy is, pollute wherever it is profitable and permitted. And peddle the cigarettes wherever you can, regardless of how many unnecessary deaths they cause.

"THE LOVE OF MONEY IS A ROOT OF ALL SORTS OF INJURIOUS THINGS."

—1 Timothy 6:10.



Watching the World

Soviet's Synthetic Blood

◆ During the past few years, a synthetic blood substitute has been developed by scientists in several countries and has been used on a small number of patients in Japan and the United States. Recently, *Sputnik* magazine, published in the Soviet Union, reported as follows: "Haematologists have come to the conclusion that the best blood substitutes are carbon tetrafluorides. These organic compounds have unique properties: on the one hand, they are biologically inert, hence, harmless; on the other, they dissolve gases, including oxygen, very well. By mixing carbon tetrafluorides with low-molecular chemical compounds one can obtain an emulsion with particles which are smaller than one-tenth of a micron. These particles can be viewed as a 'model' of the erythrocytes—the red blood corpuscles. . . . Moscow haematologists have obtained a new preparation which they have dubbed perfluorbutylamine. Tests on animals have confirmed its effectiveness. According to the scientists, this new blood substitute may even stimulate protective and restorative reactions of the body."

Rock Group and Spiritism

◆ According to *The Weekend Australian* newspaper, Kevin

Jacobsen, the Australian promoter for America's rock group Kiss, once declared: "I have known them for two years and I am still scared of them." For a flight from the U.S. to Perth, he said that he booked the entire first-class compartment of a jetliner because he "was afraid their Ouija board and seances would frighten the other passengers."

"Subtle Property of Human Milk"

◆ For the past 15 years considerable research has been done disclosing the nutritional superiority of breast milk over artificial formulas. But the nutritional benefits are not the only ones. For example, Britain's *New Scientist* magazine reports: "There is a subtle property of human milk which no formula could emulate. It is that breast milk produced when a baby begins a feed is quite different in composition from that at the end. In human milk the fat content increases five times and the protein nearly doubles during the course of a 15 minute feed. Barbara Hall, working with nursing mothers at the Nuffield Institute of Comparative Medicine in London, proposes that these changes form part of a system to control the appetite. As the milk becomes more concentrated towards the end of a feed from one breast,

the baby's hunger is satisfied and he stops sucking. . . . Such a cue for appetite control . . . cannot occur with the uniform composition of manufactured milk."

Smokeless Tobacco Dangers

◆ Prodded by a relentless advertising campaign implying that smokeless tobacco is somehow "safer," there has been an increase in the use of chewing tobacco in the United States, particularly among young men. *The Journal of the American Dental Association* comments: "Advertising implies that the smokeless tobacco products are 'safe.' They are not." In addition to nicotine dependence, the article notes the following possible dangers: "Smokeless tobacco products have shown the potential for causing cancer of the oral cavity, pharynx, larynx, and esophagus. A review of the medical and dental literature has shown 646 cases of cancer associated directly with smokeless tobacco. Smokeless tobacco can produce significant effects on the soft and hard tissues of the mouth, including bad breath, discolored teeth and restorations, excessive wear (abrasion) of the incisal and occlusal surfaces of the teeth, decreased ability to taste and smell, gingival recession, advanced periodontal destruction of the soft and hard tissues, erythema of the soft tissues, leukoplakia, and cancer."

Strict Law

◆ In the Federal Republic of Germany, a strict law strips a driver of his license for at least three months if he is found to have more than 0.8 milliliters of alcohol in his bloodstream. If the amount of alcohol is higher than 1.3 milliliters, the judge suspends the license for from six months to a year and levies a fine. If a drunken driver is involved in an accident, he could be sent to prison. In the past two years, police have cracked down on

drunken driving, halting drivers at random check points on key highways and at intersections and autobahn exits. Said Inspector Hartmut Baumgart, chief of the Bonn Traffic Police: "The goal is to get drunkards off the road. If we scare a few other drivers along the way and keep one drinker off the road, it doesn't hurt." One driver who had a few drinks and then took a taxi home said that "it's a pain, but it's worth it," noting: "I lost my license once, and I'll never let it happen again."

Thwarting Therapy

◆ A study has been made of 112 persons who received treatment for lung cancer. Of that number, 20 stopped smoking before they learned they had lung cancer, 35 stopped at the time of diagnosis, but 57 patients continued smoking while they received treatment. Those who quit smoking before diagnosis had the best survival rate, followed by those who quit smoking at the time of diagnosis. But those who continued smoking seemed to thwart the therapy, as it were, for none survived disease-free for more than 96 weeks. But six of those who quit smoking are disease-free 103 to 220 weeks after therapy began. "On the basis of this analysis," said the *Journal of the American Medical Association*, "we conclude that continued smoking during treatment is associated with a poor prognosis in patients with small cell lung cancer."—Vol. 244, No. 19, pp. 2175, 2179.

Church "Going Nowhere"
◆ At a rally at Inverness, Church of Scotland cleric Jim Salmond said, as reported in *The Scotsman*: "The Church has become an inflated Tower of Babel, blown up and puffed up by a minority group of ministers who speak neither for God nor man, and whose unfaithfulness to the word of God is increasingly bringing

the Church down into the theological gutter." Members, he added, want a Kirk (Church) that knows where it stands and where it is going. "But because of unbiblical preaching and belief, the Kirk now seems to stand for nothing much, which is why it's going nowhere."

Robbers with White Collars

◆ According to an FBI report, far more money is stolen from banks in the U.S. by white-collar criminals than by holdup men. The report showed that during the first six months of 1980 there were 3,459 bank robberies, burglaries and larcenies, resulting in a loss to banks of \$22,100,000. But during the same period there were 5,174 bank fraud and embezzlement cases, resulting in a loss to banks of \$103,300,000. Bank fraud and embezzlement almost topped the list of white-collar crimes—exceeded only by corruption of state and local officials.

Arthritis Relief?

◆ Much has been said about health benefits that can come from cutting down on the amount of red meat in one's diet and increasing the intake of foods that provide fiber and bulk. Another possible benefit has been noted by New York physician Joseph Rechtschaffen. Some of his patients who reduced beef consumption and increased their intake of fiber and bulk reported that their arthritis was disappearing. The doctor explained: "The American diet is very high in phosphorus because of the beef and cola drinks. Calcium content drops when phosphorus [intake] rises." He feels that "eliminating cola drinks and almost eliminating beef consumption may be responsible" for the arthritis relief.

Zambia's Crime Wave

◆ Skyrocketing crime is not confined to the major cities of the Western world. From Afri-

ca, the *Times of Zambia* reports: "Violent urban crime in Zambia is becoming outrageous. Every day seems to be bringing in its own horrendous crime. . . . staying at home locked up behind high walls isn't that safe any more. Driving at night is even worse. Night hold-ups are too numerous to mention. . . . It is no exaggeration therefore to say that people on the Copperbelt and Lusaka in particular are literally living in fear." The *Times* asks: "What has gone wrong? Where is it going to end? Is banditry, gangsterism, and organised crime going to be allowed to go on unchecked until anarchy reigns?" Noting that neighbors now do not usually come to the aid of a crime victim, the newspaper said that the idea of "everyone for himself" was "robbing Zambians of their basic humanity."

Uneasy Food Balance

◆ "Feeding the world next year will be like walking a tightrope without a net," said *The Wall Street Journal* late in 1980. It stated: "A single misstep, such as another summer's bad weather in the U.S., experts say, would be enough to unbalance the act, plunging the whole world into a grain shortage and some poor nations to the brink of starvation." The basic problem is that, although food production has risen the past few years, food consumption has increased even faster. Washington agriculturalist John A. Schnittker observed: "In the three seasons that have given us the biggest harvests the world has ever had, we will have a net stock reduction of 56 million tons." And world grain stocks are expected to reach a five-year low during 1981 as consumption again exceeds production.

Third-World Death Rates

◆ Are death rates in the Third World continuing to decline?

No, according to the World Health Organization's (WHO) sixth report on the state of the world's health. Some lands are even showing an increase in mortality rates. It is difficult to account for this, says WHO, "except in terms of flagging determination on the part of the governments concerned and special circumstances (for example, acute poverty) that make further improvement in health especially difficult."

"Greatest Wave of Refugees"

◆ "The greatest wave of refugees and displaced persons in modern times—far beyond that created by the dislocations of World War II—will grow this year by at least two million people," reports the *New York Times Magazine*. That brings

the total to 17 million persons. The causes of all this uprooting of people? "Sometimes, as in parts of East Africa today, it is famine that sends the ghost armies [refugees] on their way," says the report. "More often, though, it is another of the Four Horsemen of the Apocalypse: war. The history of recent decades demonstrates that war makes refugees." The report added: "During the last 10 years, 90 percent of small wars have been fought in the third world. A decade ago, those parts of the world averaged a total of less than one new conflict a year . . . Now the rate is 1.6 a year. . . . Thus the third world becomes ever more unstable, generating ever more refugees."—November 23, 1980, pp. 136, 138.

Scenic but Not Safe

◆ The famed Champs Élysées, in Paris, has long been a favorite place for tourists to stroll. Broad and a little more than a mile (1.6 km) long, it extends from the Place de la Concorde to the Arc de Triomphe and is a center for cafés and restaurants. However, tourists who have regarded this avenue as "the most picturesque boulevard in the world" are having second thoughts as to its safety. Police reports show that, on the average, there is now one theft, burglary or armed robbery on this boulevard every two hours. Tourists, frequently the Japanese, are often the victims of the Parisian thieves. In any big city today, it pays to remain alert, no matter how picturesque the area.

Second part Note 26
♦ The United Nations Economic and Social Council has been a 16-year-old institution. It has four main functions to perform: to promote international cooperation; to encourage economic development; to maintain world peace; and to protect human rights. It also has a role in the field of culture and education. The Council's work is carried out through its various committees, which meet at least once a year. It has a budget of about \$1 billion per year.

The Council's main task is to promote international cooperation. It does this by encouraging member states to work together towards common goals. It also tries to help developing countries by providing them with technical assistance and financial aid. The Council's work is carried out through its various committees, which meet at least once a year. It has a budget of about \$1 billion per year.

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"Greatest Move in History"
♦ "The greatest move of all time was made by the Chinese Communists (for example, some poverty), that made possible the Second World War." This was made possible by the Chinese Communists (for example, some poverty), that made possible the Second World War.