

Awake!

SEPTEMBER 22, 1979



CAN OUR EARTH SURVIVE?

FEATURE ARTICLES

3 SEVEN DEADLY SINS AND THE ANTIDOTE FOR THEM

These seven sins are causing the deterioration of modern society. The antidote is known, but will it be taken?

4 CAN OUR EARTH SURVIVE?

Man's scientific technology gives him the power to destroy the earth. His shortsighted greed drives him to it. Can he, will he, be stopped? If so, how?

OTHER ITEMS

- 11 Rustling "Ain't What It Used to Be"
- 11 Kangaroo Rats
- 12 Escaping from Chad's Civil War
- 17 The Marvels of Microsurgery
- 20 Triumph Despite Opposition

- 21 From Race with Death to Race for Life
- 24 The Pathfinders
- 27 The Bible's View Homosexuals and the Christian Congregation
- 28 Moral Leadership Languages
- 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.

Ten cents a copy

Watch Tower Society offices	Yearly subscription rates for semi-monthly editions in local currency
America, U.S., 117 Adams St., Brooklyn, N.Y. 11201	\$2.50
Australia, 11 Beresford Rd., Strathfield, N.S.W. 2135	A\$2.50
Canada, 150 Bridgeland Ave., Toronto, Ontario M6A 1Z5	\$3.00
England, Watch Tower House, The Ridgeway, London NW7 1RN	£2.30
Hawaii, 1228 Pensacola St., Honolulu 96814	\$2.50
New Zealand, 6-A Western Springs Rd., Auckland 3	NZ\$3.00
Nigeria, West Africa, P.O. Box 194, Yaba, Lagos State	₦2.40
Philippines, P.O. Box 2044, Manila 2800	₱17.50
South Africa, Private Bag 2, Elandsfontein, 1406	R2,20
(Monthly editions cost half the above rates.)	

Copyright © 1979 by Watchtower Bible and Tract Society of New York, Inc. All rights reserved.

Remittances for subscriptions should be sent to the office in your country. Otherwise send your remittance to 117 Adams Street, Brooklyn, N.Y. 11201.

Notice of expiration is sent at least two issues before subscription expires. Second-class postage paid at Brooklyn, N.Y. and at additional mailing offices.

CHANGES OF ADDRESS should reach us thirty days before your moving date. Give us your old and new address (if possible, your old address label). Write Watchtower, R.D. 1, Box 300, Walkkill, New York 12589, U.S.A.

POSTMASTER: Send Form 3579 to Watchtower, Walkkill, N.Y. 12589. Awake! (ISSN 0005-237X) Printed in U.S.A.

NOW PUBLISHED IN 34 LANGUAGES

SEMI-MONTHLY EDITIONS

Afrikaans, Cebuano, Danish, Dutch, English, Finnish, French, German, Greek, Iloko, Italian, Japanese, Korean, Norwegian, Portuguese, Spanish, Swedish, Tagalog, Zulu

MONTHLY EDITIONS

Chichewa, Chinese, Hilgaynon, Malayalam, New Guinea Pidgin, Polish, Sesotho, Swahili, Tahitian, Tamil, Thai, Twi, Ukrainian, Xhosa, Yoruba

AVERAGE PRINTING EACH ISSUE: 8,300,000

Published by

WATCHTOWER BIBLE AND TRACT SOCIETY OF NEW YORK, INC.
117 Adams Street, Brooklyn, N.Y. 11201, U.S.A.

Frederick W. Franz, Pres.

Grant Suiter, Secy.

SEVEN DEADLY SINS

AND THE ANTIDOTE FOR THEM

THE chairman of International Harvester, Brooks McCormick, delivered an address in which he listed his version of the seven deadly sins.

Business without morality. "What I find disturbing today is the perception that almost anything justifies profit." When social responsibility is discussed, it's lip service or the result of government mandate.

Politics without principle. There was a time when government was the butt of jokes, but it is no laughing matter now. This bureaucratic octopus reaches out to entwine every facet of our existence. To gain its ends it stoops to any means, and the credibility gap between public and politician is wide indeed.

Science without humanity. It has toppled from its pedestal as a public idol. Suddenly its blessings have turned into curses, as its technologies ruin the environment on which our lives depend.

Pleasure without conscience. McCormick comments: "Our society seems inebriated with the 'new' freedom from established rules of conduct. In the process, we have obscured the fact that most of the old rules met the test of pragmatism . . . they worked. They help prevent one person from hurting another in the pursuit of pleasure, and from hurting himself."

Wealth without work. As examples he points out welfare fraud, welfare as a way

of life for two or three successive generations in some families. "However, this greed to Get Something for Nothing spreads beyond the welfare levels . . . It permeates the craftsmen and industrial workers whose pride in the job they could do is being replaced with 'punch in, put in your time, and punch out.'"

Worship without sacrifice. "Worship must involve sacrifice—in the form of financial contribution, church attendance or simply giving more of *yourself* than you might comfortably choose to allocate to the disciplines of your creed."

Knowledge without character. McCormick's discussion of this point blends into the conclusion of his speech, published in *Vital Speeches of the Day*, May 1979:

"What we do need and will never have enough of is good judgment based on moral standards and only backed up with true character. Which, in my opinion, are the antidotes for my Seven Deadly Sins. This, then, would suggest that defeating the Seven Deadly Sins of modern society and bridging the gap between our social resources and desired social results pivots more than anything else on the individual's loyalty to his own sense of worth, his own sense of quality in everything he or she does or thinks. That sense of excellence must be strong enough to withstand the swings of fad or fashion, and even the disapproval of one's peers."

Christ Jesus is loyal to his own sense of worth, unswayed by the failings of others. "If we are unfaithful, he remains faithful, for he cannot deny himself."—2 Tim. 2:13.

CAN OUR EARTH SURVIVE?

Is this an idle question? Is it pessimistic?
Or is the earth on the brink of destruction?
What are the facts?

"WE SAILED through water filled with lumps of oil for 43 out of 57 days. Great whales and many fish which swim with their mouths open, filtering their food, are swallowing this pollution. Some of those fish we shall eat.

"There are people who tell you that . . . the sea can absorb and recycle all this pollution. I call them the Sandmen—they want to put you to sleep with calming words. Don't listen! Unless you and I—all of us—act now to stop the seas being overloaded with poisonous refuse, they will suffocate and die."

This is explorer Thor Heyerdahl's description of his second trip across the Atlantic on a reed boat. To many, it is frightening, and Heyerdahl is not alone in sounding the alarm.

A scientific study published in the Brazilian newspaper *O Estado de S. Paulo* is not less pointed: "It may be too late to restore what has been destroyed. Of life's basic components—air, water, land and light—only the latter is not polluted."

People everywhere complain about the weather. Why are there climatic changes and freak weather world wide?

Climate researcher Dr. Reid A. Bryson calls the overall effect of man's activities—his smoke, tractor dust, jet exhaust, smog from cities—the "human volcano." "We are indeed a factor in the climate equation," he says. "We may be the decisive factor."

And an article in *National Geographic* concluded: "A steady buildup of carbon

dioxide in the earth's atmosphere from the burning of fossil fuel—coal and oil—has occurred since the industrial revolution began. Higher levels of this colorless, odorless gas tend to warm up the planet by the so-called greenhouse effect, holding in the infrared radiation—heat—that would otherwise escape into space."

Other disturbing factors have been in the news lately. For example, the World Meteorological Organization (WMO) reported that pollution of the atmosphere was depleting the earth's ozone layer, which screens out part of the harmful ultraviolet rays from the sun. Meanwhile, increased ultraviolet radiation has already been linked with increased cancer of the skin, according to Rumen Pajkov, director of WMO's atmospheric science division.

Moreover, pathologist Leon S. Dochinger of the U.S. Department of Agriculture cites "acid rain" as another potential killer. It is a result of burning fossil fuels with high sulfur content, especially coal. Polluting particles and gases are spread by the wind

"Depleting the earth's ozone layer . . . increased ultraviolet radiation"

and return to the earth with the rain in the form of sulfuric and nitric acids. These directly endanger the life of fish, animals and vegetation. Besides, in the soil "acid rain" can liberate poisonous metals. These metals may find their way into rivers and lakes and thus become a health hazard.

A medical survey in São Paulo said that, next to smoking, air pollution there is mainly responsible for diseases of the respiratory organs and their being the second cause of death. Additionally, according to a U.N. report, many cancers "relate to the air people breathe or the water they drink, to the environment in which they work or live, to their personal diet or way of life."

Without water, there is no human life. But how safe is our drinking water? How safe are the rivers and oceans?

On a recent visit to Brazil, Jacques Cousteau found famous Guanabara Bay in Rio de Janeiro more polluted than the Mediterranean around Venice, Cannes and Genoa. He expressed deep concern over the destructive pollution caused by oil spills, chemical and nuclear wastes.

And what about the rivers? Under the headline "Agony of the Waters," the Brazilian newsmagazine *Veja* blamed effluents from sugarcane mills and rum manufacturers, soda from cellulose factories, sewage from growing cities and industries and other refuse for killing the

"'Acid rain' . . . another potential killer"

Brazilian rivers. A similar condition obtains in other countries.

What is more, an ever-rising demand for water is putting its availability in doubt. Syrian delegate Saub Kaule told experts at the United Nations conference on water at Mar del Plata, Argentina: "A drop of water will cost more than a drop of oil."

Why? Comments *Time*: "Between 30% and 40% of the world's food production is now dependent on irrigation. . . . Industry is also using ever increasing amounts of water—to generate electricity, to cool nuclear reactors and manufacture chemicals

and metals. As a result, many lakes and streams have been so badly polluted by agriculture and industry—as well as by the wastes from increasing numbers of humans—that they have become unusable without expensive treatment. Despite purification measures, the need to take drinking water from contaminated sources has caused widespread disease. The World Health Organization estimates that as

"A drop of water will cost more than a drop of oil"

much as 80% of the world's cases of disease are traceable to unclean water."

That is a chilling revelation. But is it all? Not really.

A group of agronomists met in Brasília and condemned the "indiscriminate and growing use of pesticides, herbicides and fungicides, leading to an ecological plight that will soon put agricultural production itself in jeopardy." And why the excessive use? Only "to obtain monetary and immediate advantages from the land," say the specialists.

Another stealthy enemy was revealed at a conference in Nairobi, Africa. It was noted that deserts are spreading in many parts of the earth. Said *Time*: "Thanks largely to man's own folly, desertification now threatens the fragile existence of about 630 million people who dwell in these regions."

No wonder U.N. Secretary-General Kurt Waldheim was prompted to make the ominous observation that "countries could disappear from the face of the map."

And what may be the causes? Environmentalists assembled in Mexico concluded: "Primitive deforestation, fire, erosion, inadequate agricultural forms and pesticides join the natural causes to accelerate the desertification process." *O Estado de*

S. Paulo noted that Brazil has "everything to form one of the largest deserts in the world within the next 25 to 30 years if it continues to occupy the Amazon area in a disorganized way."

As a matter of fact, Brazilian ecologist Jose Lutzenberger told a group of specialists: "The models of development of the present consumer society . . . rest on organic wasting of limited and irreplaceable resources. They mean the destruction of all systems for the maintenance of life on Earth."

This ecologist added: "We have unbalanced all the large and small water

"80% of the world's cases of disease are traceable to unclean water"

systems, giving rise to destructive droughts and catastrophic floods; through unchecked pollution, we will soon lose the usability of the last water source and precipitate the elimination of all forms of life in the water, including the oceans."

This is a gloomy picture. But have no efforts been made to stem the tide? Fortunately, they have. Consider some of these.

Scientists and others raise ever louder clamors for drastic measures to be taken in order to preserve the earth. Are their plans yielding positive results? Some are.

Veja magazine interviewed Hideo Oguri, who is in charge of the fight against pollution in Tokyo's rivers. He said: "Tougher legislation and even the closing down of industries has produced some results. But what is bringing better results is the constant action of hundreds of ecological groups who defend the protection of the environment."

Luiz Roberto Tommasi of São Paulo University's Oceanographic Institute, in

Brazil, believes that the rivers can be saved if the present polluting factors are eliminated or at least reduced to a level that allows for self-purification. But he also said: "There is no time to lose. . . . In England the authorities began to show concern over the Thames fifty years ago and only now salmon has returned to the river."

Speaking in Curitiba, Brazil, Jacques Cousteau said that he was going to suggest to the United Nations "a world ocean use policy established by international agreements so as to slow down the destruction of marine life." But he added that "even the most developed countries lacked any policy aimed at the preservation of marine ecology."

Similarly, Thor Heyerdahl wrote: "For a start, we should create protected areas, natural reserves where the local ecosystem could reconstruct and maintain itself. As important as this, however, is the formation and enforcement of laws in areas outside the natural reserves where the ecological balance is already affected."

Obviously, the answer to air pollution does not lie simply in higher chimneys. Take, for example, the presence of dangerous acid in the lakes of Adirondack Na-

"Deserts are spreading . . . 'thanks largely to man's own folly' "

tional Park, in New York State. The fish were dying. Eventually, the source was traced to the metallurgical district in Sudbury, Canada, hundreds of miles away. The winds carried the pollution to New York.

In Scandinavia, where ecological problems are given much attention, the mountain soil was found polluted. "Acid rain" was directly connected with Great Britain's antipollution drive. Tall factory chimneys thrust polluting agents high into

the atmosphere and the winds carried them all the way to Scandinavia.

The Agriculture Department of the United States has been coordinating data from a national network of stations in the U.S. and research stations in Canada, Scandinavia and other European countries. The urgent thought behind it is a world

**"The problem being world wide,
it has to be handled on a
global scale"**

campaign to alert everyone to the problem, as an initial step toward its eventual solution. The problem being world wide, it has to be handled on a global scale.

Praiseworthy efforts are under way. Already, the U.S. and other countries have either prohibited the use of poisonous substances such as DDT, fluorocarbons, and others, or are discouraging their use.

Pakistan introduced a reforestation program to fight soil erosion in that country. Saudi Arabia has planted 10 million acacia, eucalyptus and tamarisk trees to keep the sand dunes near al-Hasa oasis in check. Brazil is planting eucalyptus and pine trees in various areas. Similar efforts to hold off or recover wastelands have been made in Mongolia's Gobi desert.

But are homogenous tree plantations, that is, forests of only one kind of trees, the answer? Professor Celio Vale of Federal University of Minas Gerais, Brazil, is against substituting natural forests by homogenous plantations. He says that the consequences are, "first, the destruction of the soil through erosion. Then the [destruction of] typical wildlife of the forests, as the animals are unable to survive in a homogenous forest. Finally, drastic changes in the microclimate of the deforested region will occur, as the solar radiation will increase considerably due to lack of environmental protection."

What conclusions can we draw from our consideration of recommended international legislation and efforts made so far? Efficient or weak, most attempts are still only local. According to *Time*, the U.N. "warns that these unilateral moves are not enough to remove the threats to man's well-being and calls for international collaboration 'on a scale not seen so far in the history of mankind' to save the environment from irreparable damage."

However, there are almost insurmountable obstacles to success. Admits *Time*: "Still, there are many obstacles to overcome. To begin with, traditional life-styles will have to change. . . . Perhaps the greatest obstacle of all is the political question that continues to divide the world's rich and poor nations."

Admittedly, then, national and racial pride and prejudices, open hostilities, social injustices, clearly stand in the way to unification. Man's greed and often ignorance, his shortsightedness and often outright malice, oppose his making headway. Said Jacques Cousteau: "It is true that reducing all values to a common denominator—money—does not work. It is exactly that which has led our civilization to the present-day problems."

Man himself has created the situation. He has been unable to undo it. Disaster is looming ahead. Where should we

**"The land will produce crops and
the trees will bear fruit"**

turn for a way out? We invite you to consider an interesting answer.

The Bible counsels: "Don't put your trust in human leaders; no human being can save you. Happy is the man who . . . depends on the LORD his God, the Creator of heaven, earth, and sea, and all that is in them. He always keeps his promises;

he judges in favor of the oppressed and gives food to the hungry.”—Ps. 146:3, 5-7, *Today’s English Version*.

This is really an exciting way of looking at today’s problems and their solution. In fact, is it not reasonable to look to the

By showing loving obedience to the Creator’s universal rules of conduct, man would always enjoy the earth’s yield. “If you live according to my laws and obey my commands,” said the Creator to his ancient people, “I will send you rain at the



One who made our earth and mankind for the way out?

Jehovah God is the Creator-Owner of the earth. The multiple provisions for sustaining life on it are amazing. Only a loving Father-Provider would shower such blessings on his children. Plant and animal life, the rivers, lakes and seas add so much to life’s enjoyment. No wonder the first model of what God purposed for earth came to be known as a paradise of Eden, or a “park of delights.”

right time, so that the land will produce crops and the trees will bear fruit. Your crops will be so plentiful that you will still be harvesting grain when it is time to pick grapes, and you will still be picking grapes when it is time to plant grain. You will have all that you want to eat, and you can live in safety in your land.”—Lev. 26:3-5, *TEV*.

“Too good to be true,” you say? But why should it be? Stop and think.

Why should there not be plenty of food

and resources? God certainly knows what to do and can accomplish it. Does not every inventor know best how his invention should work? So God's blessing means right distribution of rains, proper climate. And we must remember that he created a perfect ecosystem in the first place.

Do not scientists admit that man's thoughtlessness and selfish tampering with this delicate system have brought on catastrophic floods and droughts, pollution, untold misery and death? But how do things work out if man cooperates with earth's natural systems that God has implanted in it?

In ancient Israel earth's Designer specified rest periods for the land itself. Israel held the land, God's property, in trust. (Ps. 24:1; 89:11; 115:16) Knowing the need for the land to be revitalized, Israel's invisible Ruler made provision. Every seventh year the land had complete rest. There was no cultivating, sowing or pruning, under threat of the death penalty for violators.—Ex. 23:11; Lev. 25:4.

"How did the people live?" you ask. Jehovah's blessing on the sixth year produced bumper crops that lasted right through the "sabbath year" and to the next crop. (Lev. 25:20-22) Besides, what grew of itself could also be consumed, though not stored. So on the Sabbath year the land lay fallow. Rain, natural growth and humus would act

"Every seventh year the land had complete rest"

as natural fertilizers. The land had an opportunity to become revitalized.

So serious was the requirement of letting the land get its rest that one reason for Israel's 70-year captivity in Babylon was the violation of God's Sabbath laws. King Nebuchadnezzar "took all the sur-

vivors to Babylonia. . . . And so what the LORD had foretold through the prophet Jeremiah was fulfilled: "The land will lie desolate for seventy years, to make up for the Sabbath rest that has not been observed.'" (2 Chron. 36:20, 21, *TEV*; also Lev. 26:34, 35, 43) For selfish reasons they had been exhausting the land.

But what happened when the Israelites returned to their homeland after 70 years? Jehovah blessed them and the land became fruitful once again, exactly as the prophet Ezekiel had foretold shortly after the Israelites were removed from their land: "There I will bless them with showers of rain when they need it. The trees will bear fruit, the fields will produce crops, and everyone will live in safety on his own land."—Ezek. 34:26, 27, *TEV*.

Years before, Isaiah excitedly declared:

"The desert will rejoice, and flowers will bloom"

"The desert will rejoice, and flowers will bloom in the wastelands. . . . Streams of water will flow through the desert; the burning sand will become a lake, and dry land will be filled with springs."—Isa. 35:1, 6, 7, *TEV*.

Did this come about? Indeed it did. The returning Israelites experienced this very thing and were still a thriving nation when the Romans occupied the land hundreds of years later.

But do we have modern evidence of the existence of a self-recuperation system in the earth?

An astonishing example of land recuperation has been achieved in modern Israel. Said one report: "The Israelis have restored some of the water-collection systems left by the ancient Nabataeans in the Negev desert, and are using the runoff to

nourish flourishing orchards of almond and pistachio trees. Other tactics that make the Negev bloom: drip irrigation systems, which feed small amounts of water directly to the roots of plants with the help of computer monitors; greenhouses for vegetables and flowers in which even the circulation of water is solar-powered; raising protein-rich algae in brackish ponds for animal feed."

That's a remarkable revival of once-desolate land. Similar revivals have taken place in other areas, such as in China's deserts. But what about land destroyed by war action? Can the earth cope with such a heavy load?

During World War II, the harbor of Truk Island became a vast underwater cemetery of Japanese warships. "Studying this sunken fleet more than a quarter of a century later," says *National Geographic*, "biologist Sylvia A. Earle and photographer Al Giddings find a unique display of nature's power to heal."

Said a local scuba diver who remembers the battle: "For more than two years afterward, oil from ships and planes covered the beaches and reefs. But the sea is healed now."

Who did the healing? No human hand was necessary. The "healing system" built into the earth and seas by their Creator did it, in just over 30 years. The superabundance of corals, plants and animals covering the sunken wrecks is a wonderful testimony to the Creator's wisdom and power.

Is this the only example of earth's own healing capacity? Consider what has happened on the Eniwetok Atoll in the Pacific Ocean. The United States chose that site as a testing ground for nuclear devices. In 1977 the islanders began to return to their former homes. What did they find after 20 years without bombs?

Writes one marine biologist: "Today fish and corals thrive in the [atomic] craters, which attests to the capacity of nature to recover from nearly any kind of disturbance." The scientists are astonished at the amazing resilience of the land.

This is exciting news! It is evident that the earth contains a remarkable built-in system for recovery. Would the Creator let man ruin his handiwork? Obviously not. Wrote the prophet Isaiah: "Thus says the LORD, the creator of the heavens, who is God, the designer and maker of the earth who established it, not creating it to be a waste, but designing it to be lived in." —Isa. 45:18, *New American Bible*.

Of course, it will need a global change of affairs. That will mean the end of the present system with its injustices, ignorance and imperfection. But how will this be brought about?

"Time . . . to bring to ruin those ruining the earth

The simple answer is contained in the Bible book of Revelation: "The kingdom of the world did become the kingdom of our Lord and of his Christ, and he will rule as king forever and ever. . . . your own wrath came, and the appointed time . . . *to bring to ruin those ruining the earth.*"—Rev. 11:15, 18.

Yes, by means of God's heavenly Kingdom government under Christ Jesus, a grand transformation will take place soon. God has proved to be a Liberator and Restorer of the land in the past. Examples in our own lifetime prove that he built into the earth a remarkable recuperation system. So we can be confident that the earth *will* survive. God will accomplish his purpose to make the earth a paradise, a delightful home for man.



Rustling "ain't what it used to be"



THEY used to come on horseback, carrying rifles and six-guns, and stealing cattle. Now they come in pickup trucks, armed with shovels, and they rustle cactuses. Rustlers in the old wild West were hanged when caught, but the modern breed of rustler draws a lighter sentence, though the damage he does is more serious. The motive is the same—money.

The thieves ride across the deserts of the American Southwest and dig up cactus plants until their pickups or vans are full, then peddle these to nurseries and homeowners for landscaping. The only winners, if they aren't caught, are the cactus rustlers. Even if they are caught, the price for one plant can pay the fine. The buyer loses. The plant he buys may die in a few months. The desert loses the plants that hold its precious soil in place. The wildlife living there suffers and dies out as the habitats are destroyed. The public loses the beauty of the deserts as vacationlands. Future generations are denied the pleasure of the hundreds of varieties of plants, animals and birds that are slowly disappearing.

The saguaros, one type of cactus that rustlers love to steal, can bring as much as \$1,000 (U.S.). But without the saguaros it is estimated that half of all species of birds in Arizona's Sonora Desert could not survive.

Buyers as far away as New York, Europe and Japan pay as much as \$40 (U.S.) a foot and more for certain types of cactus. The transplanted cactus may look healthy for months, but removed from its natural habitat it does not survive many years.

Cactus grows slowly. Some take 100 years to reach full size, but in a few minutes it is dug up. Plants are being removed from the desert faster than they can be replenished. Add to this the recreation vehicles and motorcycles that roar across these lands tearing up the plants and thin soil, and the deserts themselves are put in jeopardy.

Arizona has had laws since 1929 protecting over 200 types of desert plants. However, with only a five-person task force to combat the cactus rustlers in the entire state, the depredations continue. In 1977 California passed plant protection laws for the deserts, but it is of little value since the state has only one ranger to patrol 5,000,000 acres of the Mojave Desert. The penalties are considered stiff—fines ranging from \$100 to \$1,000 (U.S.) and jail sentences of up to one year. But very few rustlers are caught, and cactus rustling continues to be big business.

For strong reasons, environmentalists and concerned citizens worry about the future of the desert and its plants and wildlife.

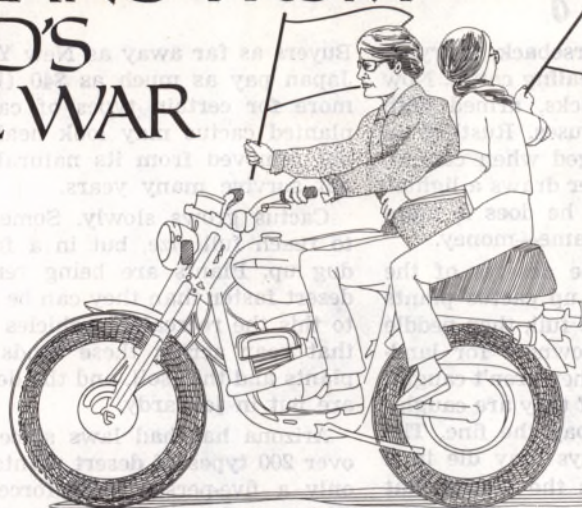


Kangaroo Rats



CALIFORNIA'S Morro Bay kangaroo rats are on the list of endangered species. They thrive in desert areas, sleeping through the hot days in their deep, cool burrows, and foraging at night. They cram their cheek pouches full of seeds and store them in underground chambers. These sun-dried seeds supply all the water they need—their digestive systems break down the fats and carbohydrates and oxidize them to form H₂O (water). They can live without drinking, and usually do. Their kidneys reclaim water that most other animals lose. These little squirrel-like rodents (they're not rats at all) have long hind legs that shoot them along the ground at 17 feet (5 m) a second, and send them soaring into the air nine times their length. But these fascinating little creations of God are dying out in Morro Bay. Man's "progress" is destroying their habitat.

ESCAPING FROM CHAD'S CIVIL WAR



By "Awake!" correspondent in Ivory Coast

WE ARRIVED in N'Djamena during the first days of August 1978. We had left our native land, France, to help in Chad with the vital work of preaching the good news of God's kingdom. We realized that there were difficult conditions in the country. This did not discourage us, however, and we were anxious to get started in our missionary work. In the missionary home were three married couples and one single brother.

Our first contact with the population as we shared in Christian service was unforgettable. At just about every door we could fully develop a Scriptural subject of conversation and felt that the people were famished for Bible truth. We were very

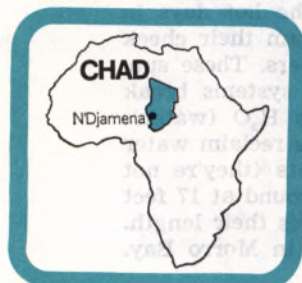
thankful to Jehovah for the privilege of being there to help.

The month of September 1978 brought to light the political duel between the pro-

fessed Christian chief of state, President Malloum, and his Moslem prime minister, Hissein Habré. Starting in August 1978, the chief of state did little more than protest verbally, then rumors started flying. But we were not involved in politics, so Anna and I continued to talk to people about God's solution to mankind's problems.

It seemed that the armed forces of FROLINAT (National Liberation Front supported by Libya to the north) had gone on the offensive during September 1978. In town we saw many wounded soldiers, no doubt returned from the front. But even then, most people were not taking this news seriously. After all, since 1966 the fire of war had been burning in Chad; most of the population was indifferent to the news and rumors.

At night we regularly heard bursts of machine-gun and rifle fire, which seemed to indicate violence in the city. In the morning, around the table we would talk about what we had heard to be sure that we weren't mistaken.



December 1978 saw a national assembly of Jehovah's Witnesses take place successfully here, although we had been apprehensive, due to the political climate.

In the month of January, the tension was such that we had to diminish our door-to-door activity somewhat in the Moslem quarters, where we had several times met up with problems. We pursued our activities more prudently, trying to get back to the missionary home as quickly as possible at nightfall.

At the vegetable market on January 27, the crisis came to a dangerous level with serious incidents. Submachine-gun fire and grenades were heard; there were several dead and injured. Schools were closed for a time. On 40th Street, where the missionary home is situated, we saw dozens of young Moslems shouting and brandishing arms. On the advice of several with whom we studied the Bible, we stayed at home waiting for calm to return.

It was at this time that we received a telegram from the Watch Tower Society's branch office in Nigeria inviting us to go to Lagos if it became necessary. Since the situation was getting worse, we took the initiative by filling out applications for visas to Nigeria. However, when things stabilized somewhat, we suspended these steps while waiting to see how things would work out. In spite of all these difficulties, we desired to pursue our activities in this land. In the preaching work we quickly forgot the local problems.

Sunday, February 11, was also a memorable day; that day, in Farcha, about 5 km (3 mi.) from downtown, almost all the local brothers, as well as all the missionaries, met in the morning at Brother Sarki's house to listen to a Bible talk, after which we all went on a campaign of house-to-house preaching. Farcha sheltered the French troops to the number of over 2,500, as well as some units of the regular Chad army. Many publications were placed that

Sunday. By the end of the morning, happiness was visible on the faces of the Kingdom proclaimers, in spite of the atmosphere of civil war.

N'Djamena, February 12: Anna and I rose as usual at about 5:45 a.m. We had breakfast with the family. Max and Pauline were on missionary cook duty that day. As for us, we left at about 7:30 a.m. to conduct a Bible study. On our motorbike we passed in front of the presidency. By the time we got in front of Chad National Radio we perceived that something was about to happen. There were armed men in firing position. The whole quarter was filled with armed and helmeted soldiers belonging to the FAN (Armed Forces of the North) commanded by Hissein Habré.

Then we went toward the large mosque along General de Gaulle Avenue. Along both sides of this street there were now men in combat uniform, in firing position. They belonged to the FAT (Tchad Armed Forces) under the direction of President Malloum.

We realized how serious the situation was. Cars were all over, headed for the most part toward the Farcha quarter. As for us, we wanted to get back home. We had to go through the gendarmerie quar-

"At night we regularly heard bursts of machine-gun and rifle fire"

ter. People were running in all directions. We were about 100 m (325 ft.) from the home of our friend Seraphin, with whom we studied the Bible, when a grenade exploded, and this was followed by automatic-weapons fire. Our hearts beating at a hundred miles an hour, we prayed aloud to Jehovah for his guidance and help in making right decisions.

We decided to take refuge at the home of the employer of Seraphin—a French

teacher married to an American. People were fleeing in our direction from the northeast quarter. We were received kindly and invited into the house. The man said that he had just returned from the university and that it was in flames. It was terrible!

A few minutes later another teacher arrived straight from Felix Eboue high school. He was especially frantic because of what he had seen. Chad National Radio was partially destroyed; violent confrontations between the FAN and the FAT were taking place at the high school. Already many students had been killed. He had just had enough time to escape the site and seek refuge in this zone where many foreign teachers and advisers lived.

Then there was a sudden calm and quiet. It was time to try to get back home. We had at least 3 km (2 mi.) to go. I put on full throttle in order to go more quickly. People were still fleeing in all directions. Finally we arrived at the missionary home.

"Under our beds we could hear the whistling of bullets, some ricocheting off our metal shutters"

Max and Pauline were there; we could do nothing but wait, trusting in Jehovah, who had already helped us.

By now aircraft were flying over the city. At about 12:15 p.m. they started firing heavily on the Kabalai quarter. The whole city echoed the bursts of automatic-weapons fire, explosions, as well as heavy mortar fire. It was war, the feared confrontation.

We started packing our bags in case evacuation became necessary. We listened carefully to all news bulletins on the radio (France International, Voice of America, Radio Canada International). We were living tense hours, not knowing how things

would work out. During the afternoon helicopters flew over our part of town firing on it, but happily our home was untouched.

At bedtime we arranged a shelter under the bed as protection against stray shells. There under our beds we could hear the whistling of bullets, some ricocheting off our metal shutters!

On Tuesday, February 13, the fighting continued just as fiercely. We were really wondering about our situation but were confident in Jehovah. Anna and I realized that even if the worst happened we still had the wonderful resurrection hope. We felt within us a helping force in those critical moments.

By Wednesday morning, February 14, the fighting seemed to have stopped, except for isolated firing. We were watching the street from our windows. Plenty of armed men were on the street corners. The radio said that casualties were heavy. We decided to make a better shelter by using literature cartons. Since Olaf and Barbara were in the "bush" visiting the congregations, we moved into their room, which was less exposed than ours at the front of the house.

We got ourselves ready for a third night of fighting. This was to be the most terrifying; the violence of combat was noticeably more severe than during the preceding nights. There, under our makeshift shelters, flat on our stomachs, squeezed against each other, we could hear the rat-tat-tat of automatic weapons and the explosion of heavy mortar bombs. At any moment a shell could demolish the house. About 50 m (160 ft.) from the house the northern camp had set up a rocket launcher on the roof terrace of an apartment building. Each time a rocket was fired there was a deafening noise. Once we thought that we had had it—one of the rockets misfired and fell near the house with a shattering

explosion. The falling debris of the rocket and dirt echoed on our tin roof. Real fireworks! At about 7 a.m. the fighting stopped again.

In the street there were still the comings and goings of those fleeing the combat zones. Many had a few belongings rolled up in a straw mat on their heads.

That day Anna and I read the Bible and made supplication to Jehovah to guide us in our decisions concerning the future. We went to bed, and the night was relatively

"Dozens of soldiers . . . aimed their guns at us"

calm in comparison to the preceding nights. The opposing forces had signed a cease-fire.

Before long everyone made his decision. Max and Pauline, as well as Patrice, would go by car to the south by way of Bongor, 250 km (155 mi.) away, to Cameroon and then Nigeria. As for Anna and myself, we would try to reach the airport. Actually, being as we were in the middle of a civil war, no way out seemed likely or possible.

That Friday night was spent largely in prayer as we needed Jehovah's direction. Sleep wouldn't come. We were wondering what the next day would bring. Anna and I got up very early, made two white flags, got the motorbike ready, and then listened to the complete African news bulletin. The cease-fire seemed to be holding. It was the best time to try to reach the French military base. With sad hearts we left our three companions at about 7:45 a.m. Later, they would head in the direction of Chagoua bridge.

When we went out, few people were on the streets. We drove in first gear in order to avoid giving the impression that we were fleeing. Arriving on the main street, we had to decide which way we would go. Soldiers were on the corners ready to fire.

We asked some Moslems which would be the safest way to reach the airport. They indicated the shortest route. Seeing that the way was deserted, we took the risk. Oh, how we prayed to Jehovah during that unforgettable trip!

The results of the war were there before our eyes—houses deserted, munition cases here and there. We greeted the people we met en route in order to relax the atmosphere. Approaching street corners, I slowed down as much as possible as there were hidden snipers. But our white flags could be seen from afar. This quarter had really suffered. There was no noise; all seemed dead. As we passed the gendarmerie, dozens of soldiers (under the command of Colonel Wadal Abdelkader Kamougue) aimed their guns at us. We made a friendly gesture. They didn't reply, but they let us continue.

Now we were in front of the prison, with soldiers on both sides, but no one slowed our flight. It was as if they didn't see us. Next, we took the avenue that led straight to the airport. All the woods around the airport were burned. Charred bodies were scattered about, and houses blown open by bombs had a sinister appearance.

On arriving at the airport we were directed to the welcoming service. We explained that we had come from the Moslem quarter in the northeast part of the city. The military authorities said that it was a miracle that we had been able to get by the gendarmerie. They told us that others had tried to reach the base but in vain. Some Europeans who had attempted this means of escape had been slain.

That afternoon, about 800 corpses were buried in a common grave. Hundreds of bodies were still visible in various quarters of town: Kabalai Moursal, Saaba Ngali, Bobolo, St. Martin's Basin, by the National Radio Station, downtown. These corpses had swollen to double their normal

size, and hungry dogs were starting to eat them. The smell of death hovered over the city.

The number of dead in the capital was now estimated in the thousands. A member of the Health Service told us that the hospital, which also had been shelled, was overflowing. We saw wheelbarrows carrying bodies of those terribly mutilated by knife wounds. Several embassies had been destroyed and the U.N. building burned.

The authorities commended us for the initiative taken, as they had been aware of our situation, but had been unable to intervene to evacuate us. Since all our

"Corpses had swollen to double their normal size, and hungry dogs were starting to eat them"

papers were in order, the French authorities gave us a meal and put us on the next flight out on an airforce plane. After a wait of several hours on the runway, our plane took off for Libreville, Gabon, at 6:30 p.m. We were sad to have to leave N'Djamena under such circumstances. We were sure that it would be a long time before we could come back to this country locked in civil war.

The plane landed in Libreville at about 10:00 p.m. All the French national evacuees were looked after by the French embassy. We were lodged in the Okoume Palace Hotel.

Since the Society had suggested that we go to Nigeria, Monday morning we went to their embassy to get a visa. The consular officer absolutely refused us a visa since we were French and evacuees from Chad. He wanted nothing to do with us. Even a 24-hour visa was refused. What should we do? We had very little money on us.

From there we could, of course, very easily accept evacuation to Paris, but we desired to remain in missionary service in

Africa if at all possible. With Jehovah's help we decided to try to go to Abidjan in Ivory Coast. With the help of the Air Afrique passenger agent, who was supervising the repatriation of Air Afrique personnel and their families evacuated from N'Djamena, we were able to get two tickets, Libreville-Abidjan-Dakar. They even kindly gave us a reduction as missionaries—this in a country where the work of Jehovah's Witnesses is under ban. There were only two places left on flight RK 103. We were overjoyed to be able to stay in Africa.

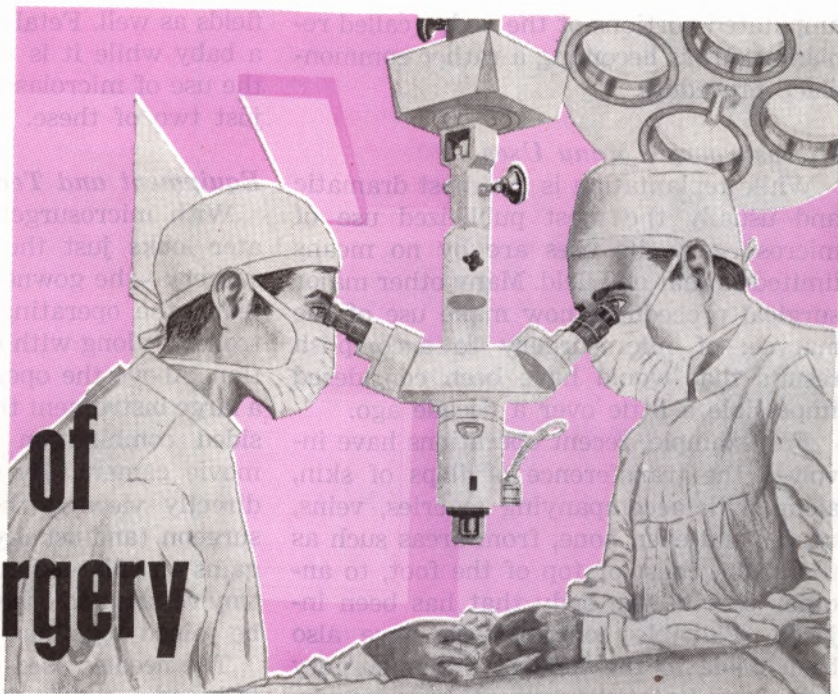
Thus, on Tuesday, February 20, we arrived in Abidjan at about 3:45 p.m. and went through customs at the airport without any problem. How happy we were to be here, appreciative of Jehovah's protection! After some searching we finally found our Christian brothers. We'll never forget the welcome and the love extended to us by our fellow missionaries. All the brothers we have met in Abidjan have shown themselves to be full of goodness toward us.

Here in Ivory Coast we are continuing to sanctify Jehovah's name and are enjoying the preaching work in a residential quarter of the city very much. What a privilege it is to tell others about Jehovah's purpose to bring true peace and security to all who love righteousness! (Mic. 4:2-4; Ps. 46:8, 9)—*Contributed.*

In Future Issues

- **The Bible Survives
Natural Obstacles**
 - **World Population
—Is It a Problem?**
 - **Why Should You
Believe in God?**
-

The Marvels of Microsurgery



By "Awake!" correspondent in Australia

A YOUNG mother, working in her home, suddenly heard an anguished scream. Rushing outside, she was horrified to find that her three-year-old son had just used an ax to chop off two of his younger sister's fingers. A plumber, using a circular saw, accidentally amputated his middle finger and partially severed two others. A two-year-old boy fell off the back of his father's farm grass cutter, and his foot got caught in the blades and was cut off at the ankle. A boilermaker amputated his right forearm about halfway between wrist and elbow when he crashed through a plate-glass window.

If these accidents had occurred about 10 years ago, all that could have been done would have been to provide medical attention to the wound. The amputated portion would have been discarded. Today, however, if you or any of your family are faced with situations such as these, the

prospects for replacement and complete healing of the severed part would be excellent—if you can gain access to the marvels of microsurgery.

As the name suggests, microsurgery is performed under a microscope, enabling specially trained surgeons to join together arteries, veins and nerves, some smaller than one millimeter ($1/25$ of an inch) in diameter. Not only are body parts rejoined, but blood flow and feeling can be restored to amputated fingers and limbs.

Interestingly, the technique is not new. Early beginnings took place in Sweden in 1921 with ear, nose and throat surgery, and then with eye surgery in the 1940's. Then in 1965, in Japan, an amputated thumb was replaced successfully, while in the next year in China, the first index-finger replacement was accomplished. In 1968 in Sydney, Australia, the world's first successful finger replacement was performed on a child. Now, in many parts of the world, successful reattachment of

amputated portions of the body (called replantation) is becoming a rather commonplace procedure.

Microsurgery's Many Uses

While replantation is the most dramatic and usually the most publicized use of microsurgery, its uses are by no means limited to that one field. Many other major surgical procedures now make use of the marvels of microsurgery to accomplish results that would have been considered impossible a little over a decade ago.

For example, recent operations have involved the transference of flaps of skin, along with accompanying arteries, veins, nerves and even bone, from areas such as the groin, chest or top of the foot, to another part of the body that has been injured. Valuable contributions have also been made to the field of major surgery that necessitates the removal of large portions of tissue, such as with throat cancer where the formation of a new esophagus is needed. The vessels and nerves in the transferred portion are connected by microsurgery to those in the new location, while the donor area is similarly closed, or skin may be grafted to close the wound. Because just the one individual is involved, rejection problems are minimized.

Another major use of microsurgery that is rapidly expanding in scope is the reversal of sterilization operations for persons whose circumstances in life have changed. Although vessels as small as one third of a millimeter (0.0130 inch) are joined in reversing male vasectomies, one study showed a 90-percent restoration, with early pregnancy of the spouse in half of the case histories. Women's Fallopian tubes have been rejoined with such good results that a recent newspaper headline claimed: "For sterilized mothers there's an 80 p.c. chance of children . . . the 2nd time around."

Research is being done to open more

fields as well. Fetal surgery—operating on a baby while it is still in the womb—and the use of microlaser beam in surgery are just two of these.

Equipment and Technique

With microsurgery, the operating theater looks just the same as for general surgery—the gowned and masked surgical team, the operating table, the anesthetic trolley—along with one very obvious addition. Above the operating theater there is a large instrument that resembles a double-sided combination of binoculars and a movie camera. By using this, instead of directly viewing the patient, the microsurgeon (and usually his assistant as well) gains an enlarged stereoscopic view of the tiny vessels and other body parts that must be joined together.

The needles used resemble a baby's eyelash and are difficult to see with the naked eye. The nylon thread, 0.018 millimeter (1/1400 of an inch) in diameter, a quarter the thickness of a human hair, is bonded to the needle so there is no need to thread it. The surgeons also use ultra-fine jewelers' forceps, small vascular clamps, fine scissors and a special needle holder.

Individual knots must be used, as continuous stitching would prevent the necessary movement of a vessel with pulse. As many as 14 knots could be placed in a vessel about one millimeter (1/25 of an inch) in diameter. If you are familiar with hand sewing of cloth materials or leather, you can imagine how painstaking and time consuming it would be to tie such intricate microscopic knots. The technique was recently described as "probably one of the most difficult tasks in the world. The slightest tremor of the hand spells disaster."

The Microsurgeon at Work

Watching the surgeons working at their task, one is impressed by the patience, con-

centration and coordination necessary to accomplish the desired result. Slow, gentle hand movements are required, so most microsurgeons avoid drinking coffee or alcohol before operating as these can produce tremors in the hands, imperceptible to the naked eye, but which appear like shaking when seen under the microscope.

Because of the techniques and special skills that are unique to this field, expert tutoring and years of training, practice and experiment are necessary. Australia is considered the world leader in microsurgery at the present time, which is fortunate, as statistics suggest that Australians tend to suffer more accidental amputations per person than any other industrialized Western nation.

Let us now 'focus in' on an operation to restore the completely severed palm of a hand to see what actually takes place during microsurgery. Skin, muscles, tendons, nerves, veins and arteries must all be reunited in a complex of microscopic knots.

Four arteries and four veins are rejoined to provide adequate circulation. Being thin walled, veins collapse and shrink and consequently can be very difficult to locate. Once located, it is essential for them to be cleaned out, trimmed and joined. If a length of vessel has been damaged, a bridging section from elsewhere in the body may be needed. By joining veins first and then arteries, blood loss can be lessened.

About 10 nerves to fingers are repaired, each nerve having five or six fiber bundles. Nine tendons and eight small muscles are also joined together. Finally, stitching is required for all skin structures. All together, about 180 microscopic stitches and 100 conventional ones have been inserted.

This particular operation lasted for about six hours. Depending on the objective, operations may vary in length from two to 20 hours. The replacement of just one finger takes four to six hours.

Emergency!—What to Do

Suddenly it happens! You, your loved one or your workmate accidentally amputates a finger, hand or leg. *Do not panic!* Place the severed part in a clean plastic bag (or rubber glove) and seal well so water cannot leak in. The part should then be kept cool—at about four to six degrees Celsius (39 to 43 degrees Fahrenheit). So place the *bag* in cold water containing lumps of ice and get it to the nearest hospital or microsurgical unit as quickly as possible. If a delay is involved, the part could be stored in a refrigerator, but *not* in a freezer. *Do not pack the part in ice* or immerse it in antiseptic solutions or disinfectants, as these destroy tissue and may make rejoining impossible. *Do not* even wash it, as it is important to keep the amputated part dry.

It is obviously a good idea to know the location of the nearest microsurgical unit. *The Lancet*, October 2, 1976, notes: "Regrettably, amputated digits are still being discarded by casualty officers when they should be cooled and dispatched with the patient to the nearest microsurgeon."

The time periods for successful replantation vary for different members of the body. Amputated fingers have survived after 10 hours without effective cooling and over 30 hours when properly cooled. Experimenters replanted a dog's leg after separation and refrigeration for 48 hours.

Limitations and Benefits

Success in reattachment is dependent on many factors. With a sharp guillotine-like amputation of a finger, there is close to a 100-percent chance of successful replantation. The prospects are reduced if tearing, crushing or other serious damage to tissue or bone has occurred. The microsurgeon may decide not to attempt the operation if the amputated part is too damaged. The patient's condition is an-

other possible limiting factor, as the person must be well enough to endure a long operation.

A recent survey in Australia showed a 70-percent success rate in replanted fingers and 80 percent in replanted arms. Another report showed that movement of replanted fingers was generally 80 percent of normal except for limitations of stretching of some joints. Exercise and physiotherapy generally are needed after the operation to restore function to the formerly amputated part. However, reattachment of amputated parts above the mid-forearm has so far produced disappointing results.

When a thumb has been amputated, great effort is made to restore it, as the thumb provides 40 percent of the efficiency of the hand. If the severed portion cannot be reattached, microsurgeons have been able to transfer the patient's large toe. After the toe's tendons, nerves, vessels and bones have been joined, the patient has feeling that is almost as good as it was in his original thumb.

"It's funny how much like a thumb a big toe can look when it's actually transferred," one doctor commented. "It's a fatter thumb than before, but that can be surgically improved." To many people the thought of losing a big toe may not be too appealing, but, then again, a big toe is not needed for eating or writing or performing the myriad of tasks a thumb has to do each day.

After a short period of adjustment and

training, a person can once again walk, run and share in sporting activities. A professional football player is one of a growing number of Australians who have big toes for "thumbs."

Happy Endings

People from all walks of life have derived benefit from the marvels of microsurgery. Take, for examples, the persons mentioned earlier. These are typical of hundreds of cases.

The little girl, now about a year older, has both fingers restored and her injured hand can scarcely be distinguished from the other. For the plumber, all fingers survived, but he does have some problems during cold weather. The two-year-old boy, now eight, runs, jumps and plays football normally. With regard to the boilermaker, his forearm was joined so well that he has taken up karate and can break roof tiles with his formerly cut-off arm.

Yes, microsurgery is a marvelous technique, able to accomplish a great deal of good for those in need. Even more wonderful, however, is the amazing healing capacity of the body. Surgeons may sew various body parts together, but inbuilt regeneration testifies to the greater wisdom of the One who designed our bodies. Appreciating this makes us echo the sentiments of the psalmist who said respectfully to our Grand Creator: "I shall laud you because in a fear-inspiring way I am wonderfully made."—Ps. 139:14.

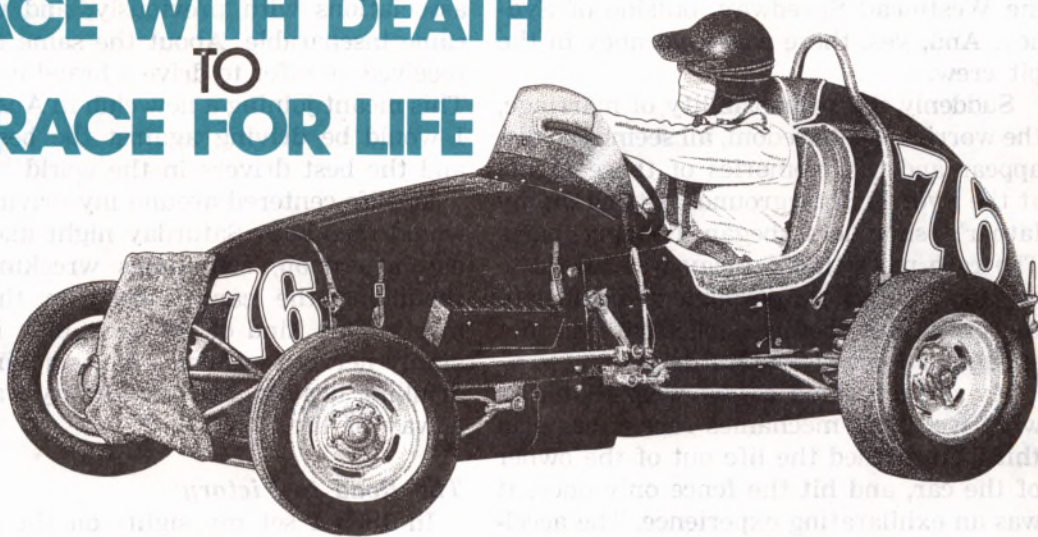
Triumph Despite Opposition

● Early in the sixteenth century, Bible scholar William Tyndale translated much of the Bible from Hebrew and Greek into the English language of his time. However, there was great clerical opposition to his translation. Hence, copies of Tyndale's rendition of the Christian Greek Scriptures (the first ever printed in English) had to be brought into England from

continental Europe in barrels, cases, bales of cloth, sacks of flour and the like. The clergy burned thousands of copies at St. Paul's Cross in London as "a burnt-offering most pleasing to Almighty God."

● As it is, the printing press was too much for the opposers. The Bible triumphed in its fight to live.

FROM RACE WITH DEATH TO RACE FOR LIFE



WHAT a sight! Beautifully painted, multicolored cars with chrome plating glistening under the lights. Motors revving to the limit, 20,000 screaming fans and the smell of racing fuel in the air. Small speed cars driven at breakneck speeds, often just inches apart.

These are my first recollections of speedway racing. I was just a small child that night when my father took me to the floodlit Sydney Showgrounds, but the impression made there stayed with me for decades and deeply affected my life. I too was to enter the same race with death that I was observing that night.

Cars Mean More than Marriage

I was born into a middle-class family in 1940. My father was a builder and a well-respected man in the community. As with the majority of fathers in that era, discipline and respect were foremost in daily life. And as with the majority of sons, by the time I was a teen-ager, I felt that I knew more than my parents did. I began dating, against their advice, before I was 16 years of age. This led to a situation that

resulted in marriage at 18 years of age. We thought we knew everything.

It did not take long to realize how unprepared for marriage I really was, and soon I became completely bored with the situation. The responsibility that comes with marriage became a real burden to me, and, after viewing other married people around me, I decided to do just what they did with their responsibilities—ignore them.

I bought a car and began spending all my time and money on it. At that time I did not drink or smoke, and adultery was a dirty word. I would just spend my evenings down at the gas station, where I could talk to the mechanic about cars and motors. My wife began to complain and, when she got no satisfaction, she began to nag. I settled down for a while, built a home and gave my children a little attention, but soon became bored again.

Love at First Sight

So back to the gas station I went. But this time, when I walked in, sitting there in the middle of the floor was a midget

speed car. It was love at first sight. When could I see it run? Sunday, I was told, at the Westmead Speedway, outside of Sydney. And, yes, there was a vacancy in the pit crew.

Suddenly the responsibility of marriage, the worries, the boredom, all seemed to disappear and the memories of those nights at the Sydney Showgrounds, sitting on my father's shoulders, began flooding back. The race meet that Sunday was magic to me and I became a permanent member of the crew. But, before long, that was not enough. I knew I had to drive.

My chance came a few weeks later in what we call a mechanics race. I came in third, frightened the life out of the owner of the car, and hit the fence only once. It was an exhilarating experience. The acceleration was fantastic. The noise and the danger kept my adrenaline pumping for hours. I relived that race for weeks. The comment that I looked like 'a drunk cat on ice skates' did not deter me at all.

But an occasional drive was not enough, either. So, some time later, I became the proud owner of my own speed car. We rebuilt the car and won many races. By this time, I had taken on the tobacco habit, and adultery was the accepted thing. Married life had been left far behind, although I still lived with my wife.

A Race with Death

Violent death was a constant worry to me, as winning involved taking a lot of chances. Cars were equipped with safety belts and roll bars. Crash helmets were inspected before each race meet, as were the cars. Drivers were not allowed to drink alcohol for 24 hours before a race meeting, yet the death toll was still very high.

I would constantly wonder what happened to my friends who were killed. Did they go to heaven, as was said at their funerals?

In 1964, two things happened that

changed my life. I met a girl who was quite different from the girls I had formed associations with previously, and we became inseparable. About the same time, I received an offer to drive a brand-new car. This meant joining a new club in Australia. I would be driving against the best cars and the best drivers in the world.

My life centered around my driving. We would race both Saturday night and Sunday afternoon, sometimes wrecking and rebuilding the car in between the two meets. This kind of life soon took its toll on my nervous system. I was smoking and drinking heavily, and immorality was now a way of life.

The Road to Victory

In 1965 I set my sights on the Junior Championships, but lost it on the night when I pulled all my goggles off at once. (We would wear from four to eight pairs of goggles on top of one another, pulling the top pair off as it got dirty.) However, the very next year I did win and became a permanent A-grade driver. From then on I won many races.

Although death seemed ever present, I considered myself a fairly good driver and felt convinced that I would never make a mistake that would really hurt me. I was soon shocked, however, when the driver considered the best in Australia was killed not 20 m (66 ft.) from where I stood. He made the exact mistake that he had previously warned me not to make.

Success has its drawbacks in speedway racing, as the fastest car must start from the rear of the field. To win races from there means taking many risks, and accidents at times are horrifying, involving up to a dozen cars. I was driving well but I was told that one thing was lacking. If I wanted to be a really good driver I would have to throw caution aside and forget about any danger to others. This I found I could not do.

The 1967-1968 season came with a new car and our sights set on the Australian and World Titles. I was in fact leading the field in the Australian Title race when my motor blew up. So close to victory and yet so far.

Then came World Title night. I had qualified for the front row. All I needed to do was stay there for 35 laps at break-neck speeds. After three restarts due to accidents the race got under way and I did just that. Victory was mine! I could not believe it. I was the *world champion*!

But what a hollow victory it turned out to be. It did not take long for me to realize that the World Title really meant nothing. In fact, through it I lost many so-called friends. Here I was, 28 years of age, addicted to tobacco, alcohol, racing cars and women, and sporting ulcers and a constantly nagging conscience.

A Death to Change My Life

So the next year I decided to sell my racing car and move to Queensland, taking my girl friend with me. I became a builder again and for the first time in my life became self-sufficient. Also, my father and I became good friends. We started to do things together and really enjoyed each other's company.

But this happy situation did not last for long. In 1971 a heart attack took my father's life. Seeing his lifeless form broke my heart. It took many months for me to accept the fact that he was gone. I became puzzled again. Where was he? Was he looking down at me now? Was he being tormented in a fiery hell? What sort of man was he in God's eyes? Would I ever see him again?

Not long after that, these questions were answered. My sister-in-law had been studying with Jehovah's Witnesses and was feeding information to my brother who, in turn, was passing it on to me. Learning

the truth about death was a great source of joy to me. To know that my father and friends were not being tormented in a fiery hell and that I could one day see them all again, provided I did God's will, was both comforting and thrilling.—Eccl. 9:5, 10; Ps. 146:3, 4; John 5:28, 29; Acts 24:15.

I began to tell my friends and women associates at the hotel what I was learning. But they treated me as if I had grown a second head!

A New Race Under Way

After an extensive study of the Bible, I made a decision to serve Jehovah God, using my life to please him and not just myself. I was entering the race for life. But to run in it I had to "put off every weight." (Heb. 12:1) For me, this involved significant changes in my life. The excessive drinking, the immorality and the tobacco habit had to go.

Next came the question of door-to-door witnessing. Never! was my reaction. But again I underestimated God's spirit, and the truth of God's Word became like a fire within me, as it had to Jeremiah of old. I just had to speak.

In 1973 my new wife and I became dedicated and baptized servants of Jehovah. Happily, my former wife also is now one of Jehovah's Witnesses, and she and the children are safe within the Christian congregation.

So it was, in December 1978, I stood in the same arena where 10 years before I had become the world champion. Again the stands were filled with people, but what a different atmosphere! This time I was in a race in which all could be winners instead of just one, for I was attending the "Victorious Faith" International Assembly of Jehovah's Witnesses.

Yes, truly, Jehovah willing, the race for life is the one that I hope to win.—*Contributed.*

THE PATHFINDERS

By "Awake!" correspondent in the British Isles

WHAT did Christopher Columbus, the Vikings, the Polynesian sailors and Noah have in common? Knowledge that the flight of certain birds can be used to indicate the presence of dry land.

Did you know that Columbus, on his first voyage across the Atlantic, altered course from west to southwest because many birds flew that way in the early evening? He discovered the Bahamas a few days later.

Birds are navigators par excellence. Consider just a few of their more amazing feats: The New Zealand bronze cuckoo is raised by 'foster parents' that do not migrate. Yet, these young birds, showing great navigational expertise, fly northward for 2,500 miles (4,000 km)

across virtually empty ocean to the Solomon Islands. Great shearwaters are to be found as far north as the Shetland Islands, north of Scotland. However, when the breeding season approaches, they return by the millions to the Tristan da Cunha Islands, as far south as the southern tip of Africa. Even flightless penguins have this homing ability. Adélie penguins released 1,900 miles (3,000 km) from their home on the Antarctic ice returned there.

These journeys have all been carefully documented. A numbered band is placed around the leg of a bird, with a message requesting that anyone finding the bird communicate with the address on the band, giving the location of the creature

when found. Although only a few are retrieved, the technique has enabled scientists to plot the flight paths of many migrating species.

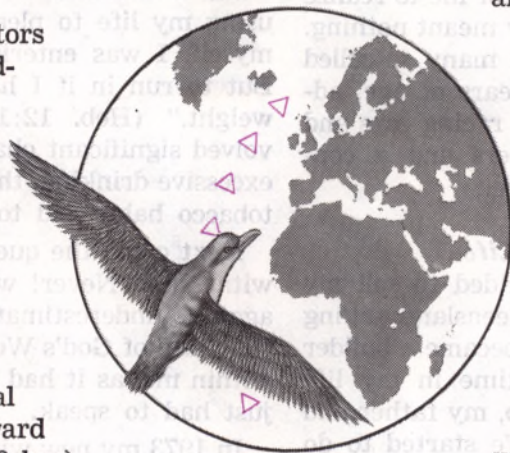
In recent years birds have also been tracked by means of radar. Others have been fitted with tiny radio transmitters so that their flight paths can be followed. But the bulk of our knowledge has come from laboratory experiments. Before examining some of these, it would be enlightening to see what human navigators need in order to reach their destination.

Imagine a family going for a picnic. They park the car and hike into the woods to eat. In the evening, as they return, they lose their way and start walking in circles. What do they need in order to find the car? Two things—a map and a compass direction. The map must show them where the car is and where they are. By itself, however, this information will do them no good if they cannot orient themselves on the ground. They need a compass or something similar to point them in the right direction.

When we know a town well we do not have to carry maps and compasses with us, because we carry a map in our mind. Do birds carry a map in their brains? How do they find their compass bearings?

How Do Birds Navigate?

After much research, it has been well



established that some birds can fly directly home when released in a strange area. This precludes the possibility that they find their way by first flying around in circles looking for familiar landmarks. These birds really can navigate. This involves more than simply flying south in the fall and north in spring on a normal migration flight. How they know where to fly is largely a mystery; in other words, the nature of any "map" that they may possess is unknown. Today, though, we do know of several systems that birds can use to orient themselves to fly in a constant direction.

Think of our family again. Suppose the father has a map in his pocket and uses it to find their position. He knows where their car is and realizes that they have to walk southeast to reach it. But how can he find southeast? Well, if there is a clear sky, he can find south by using a watch and the sun. How? He can hold the watch horizontally and point the hour hand toward the sun. The sun appears to move through about 15° per hour and there are 30° between any two consecutive hour divisions on a watch face. Thus a line midway between the hour hand and the "12" will point approximately south. Now it is a simple matter to find southeast. Can birds likewise use the sun to guide them?

Daytime Orientation

In 1949 Gustav Kramer kept pigeons in drum-shaped cages, fitted with 12 identical food cups around the edge. He found that he could train the birds to eat from

the cups pointing in a certain direction and that they used the sun for orientation. (In cloudy weather the birds ate from any food cup.) Thus pigeons gave evidence of having an internal clock that enabled them to compensate for the movement of the sun across the sky.

Kramer checked his results using starlings. He trained them to eat from certain cups, as before, but then substituted a moving light for the sun. Viewing this light as the sun, they ate from different cups, going from cup to cup at 15° per hour. In actuality, the light only moved up and down, and not horizontally, to mimic the sun's rising and setting.

Many species of birds are now known to be able to fly in a constant direction quite accurately, using the sun and a built-in clock to help them. How accurate are their measurements?

Well, an error of 1° in determining could put them approximately 70 miles

(110 km) off course at the equator. A four-minute error in their clock would lead to the same great error. And birds have a reputation for pinpoint accuracy as navigators.

Let's return once again to our family. If they wait until nightfall they will be able to use the stars as a compass that is more accurate than the sun. Can birds do the same? The answer seems to be yes. After all, many birds migrate only at night.

Nighttime Orientation

A German, Franz Sauer, in the 1950's was the first to demonstrate the ability of birds to use the stars as a guide.



He used blackcaps and garden warblers.

More recently, Stephen E. Emlen has experimented with North American indigo buntings. He placed the birds inside a planetarium, keeping them in cages designed to record the bird's movements. When the time for their migration came around, they were shown a sky consistent with what they would see at that time of year outside. These birds showed a marked tendency to want to fly in what the planetarium told them was a southerly direction, their normal migrating course. Interestingly, the buntings seemed to recognize, not individual stars or constellations, but, rather, that the sky was rotating around a fixed point.

To test this, Emlen took buntings from nests, never letting them see the real sky. Instead of rotating the sky in the planetarium around the pole star, as is the real case, he adapted it to rotate around the star Betelgeuse. When the time came for them to migrate, these young buntings tried to fly away from Betelgeuse in what they evidently thought was a southerly direction.

Of course, much of the time the sky is overcast. While a hiking family would have no difficulty if they had a compass to direct them, how do birds fare in cloudy conditions?

Is Magnetism a Factor?

In 1885, A. von Middendorff proposed that birds could sense the earth's magnetic field and find their way by means of it. This hypothesis was tested many times, with mainly negative results. It seemed inconceivable that a small bird such as a robin could detect magnetism. In recent

years, however, evidence has been found showing that at least some species use the earth's magnetic field for orientation. What is this evidence?

It was noted that many fast races between homing pigeons took place under a heavy cloud cover. So experimenters attached small magnets to individual pigeons that had demonstrated the ability to fly home in cloudy weather. They all lost their way. The pigeons were disoriented, evidently because the magnets disturbed the magnetic field around them. In another experiment, pigeons were fitted with frosted contact lenses. Although they could only see a few yards, a surprising number were able to fly within 200 yards (200 m) of their loft after a journey of 80 miles (130 km).

Others have experimented with migratory robins kept in cages. At the time for migrating they aligned themselves in the direction that they would normally be flying. Was the earth's magnetic field guiding them? It would seem so, because the experimenters found that, by using electrical coils to alter the magnetic field, they could make the robins want to fly in another direction.

Scientists feel that perhaps the picture is still not complete. They are now studying how low-frequency sound, polarized light, smell, as well as changes in barometric pressures, could be used by birds to help them to navigate. Others are trying to ascertain the means by which some birds are able to detect magnetism.

Before the mystery is finally solved, there will no doubt be much more to surprise us in a field that has already produced many surprises.



The Bible's View



"EPISCOPAL Panel Advises Church Not to Bar Homosexual Priests." This headline in the June 4, 1979, issue of the *New York Times* was followed by a report from a 12-member national Episcopal Church commission. It endorsed the ordaining of homosexuals who "because of the enormous cultural pressure against them" do not want to be exposed, and others "who have suffered long enough and want to come out of the closet." The report continued:

"The question, with regard to any ordinand, is whether he or she can and will lead a life which is a wholesome example to Christ's flock. There should be no barrier to the ordination of those homosexual persons who are able and willing to conform their behavior to that which the church affirms as wholesome. Some homosexual persons can so conform their behavior and have done so, some even as they have acknowledged their homosexuality, while others cannot or will not."

A few years ago a talk-show hostess had as a guest a man who had established a church for homosexuals. Both the panel of guests and the audience were very permissive about homosexuals being good Christians and ministers of

Homosexuals and the Christian Congregation

God. However, the hostess of the show maintained her opposition to this on Biblical grounds. She received the following letter from one of the home viewers, which supplied Scriptural support for her stand:

"I appreciated your conduct of your Friday evening show, September 11. Beleaguered by both panel and audience, you stood your ground relative to homosexuality.

"The appalling thing about Troy Perry is that he forms a church for homosexuals and contends it's God approved. He sought to justify it on your program by quoting Hebrews 10:25 about not forsaking the assembling of ourselves together. He reasoned that that included homosexuals.

"The Law of Moses did not permit a homosexual to exist within the congregation of God: 'If a man lies with a male as with a woman, both of them have committed an abomination; they shall be put to death, their blood is upon them.'—Leviticus 20:13, *Revised Standard Version*.

"The New Testament repeated the condemnation: 'God gave them up to dishonorable passions. Their women exchanged natural relations for unnatural, and the men likewise gave up natural relations with women and were consumed with passion for one another, men committing shameless acts with men and receiving in their own persons the due penalty for their error.'—Romans 1:26, 27.

"To have a church for homosexuals is akin to having one for murderers, robbers, adulterers, etc. Such persons may come into God's favor, but to do so they abandon their wrongdoing: 'Do you not know that the unrighteous will not inherit the kingdom of God? Do not be deceived; neither the immoral, nor idolaters, nor adulterers, nor homosexuals, nor thieves, nor the greedy, nor drunkards, nor revilers, nor robbers will inherit the

kingdom of God. And such were some of you. But you were washed, you were sanctified, you were justified in the name of the Lord Jesus Christ and in the spirit of our God.'—First Corinthians 6:9-11, RSV.

"In the chapter just before the above quotation Christians are told not to associate with those guilty of the above immoralities, even though they call themselves Christian brothers. They were to be put out of the congregation. This hardly sounds like assembling together with them.—First Corinthians 5:9-13.

"Homosexuality is also called sodomy, a word derived from the city of Sodom that was destroyed by God for practicing homosexuality.

"The style today is to be ultra-broadminded. June Lockhart accused you of moralizing. Today moralizing is a no-no. Homosexuality isn't. Few things are. But moralizing is. We should expect this. In a society that is in the throes of a moral breakdown, we must expect moralizing to be grossly unpopular. We must be permissive of everything, or be accused of being harsh and cruel and void of understanding. But you don't have to commit murder to understand it. You may be sympathetic toward those with a weakness for homosexuality without approving it.

"Do your own thing? But what if you have dedicated yourself to God and ob-

ligated yourself to His thing? All of us have weaknesses to resist and strive to overcome. The righteous man falls seven times and gets up. We must keep getting up. We must do that most difficult of things—say no to ourselves.

"But saying no to ourselves is another modern no-no. We avoid that distasteful chore by embracing a new morality. Which is only the old immorality with an 'Approved' label pasted on it.

"But we should not rope God into it and claim he also approves it. He may get sick and tired of us, as he did with people before us. Malachi 2:17 tells about it: 'You have wearied the LORD with your words. Yet you say, "How have we wearied him?" By saying, "Everyone who does evil is good in the sight of the LORD, and he delights in them."' "

"A permissive society may applaud the modern School of Anything Goes, but God expresses a different view, as recorded at Isaiah 5:20: 'Woe to those who call evil good and good evil, who put darkness for light and light for darkness, who put bitter for sweet and sweet for bitter!'

"Virginia, I enjoy your show and I appreciate your spunk."

The talk-show hostess replied to this letter: "Thank you for your most informative letter. I agree with you thoroughly and am most appreciative."

Moral Leadership Languishes

"Like sheep, all of us have gone astray or followed false shepherds after pausing to kill our emergent prophets. Political leaders we have in abundance, as well as military leaders, business leaders, social leaders, intellectual leaders. But moral leadership languishes, and upon moral leadership we still rely for salvation."—Karl Menninger in "Whatever Became of Sin?" p. 192.



Watching the World

Bible Translations: 1,660

◆ According to the annual "Scripture Language Report" of the United Bible Societies, with headquarters located in England, by the end of last year the Bible, the whole or in part, could be read in 1,660 different languages. The complete Bible has now been published in 268 languages; the Greek portion ["New Testament"] by itself is available in 453 languages; and individual Bible books have been translated in 939 different languages. Last year, the complete Bible appeared for the first time in two new languages—Kate, spoken in Papua New Guinea, and Mofa, used in Cameroon. In addition, parts of the Bible were translated into 64 other languages, ranging from Abuan (Nigeria) to Zoque (Mexico).

A-Bomb Victims

◆ How many people were killed when atomic bombs were dropped on the Japanese cities of Hiroshima and Nagasaki at the end of World War II? Various estimates have been made over the years, including one in 1976 by officials of the two cities. They had said that approximately 140,000 died in Hiroshima and 70,000 in Nagasaki. However, more precise figures were asked for by the cities, so 38 researchers spent two

years documenting information. Their conclusion: A-bomb fatalities in Hiroshima totaled at least 190,000, and in Nagasaki at least 120,000. Yet, the destructive power of those atomic bombs was only a fraction of that of the nuclear weapons available today.

Mystery Solved

◆ One of the world's richest fishing grounds is located in the frigid Bering Sea between Alaska and the Soviet Union. But why these cold, inhospitable waters should be the spawning ground for so much marine life has long baffled scientists. Research lasting several years was undertaken jointly by the United States and the Soviet Union to try to unravel this mystery. By monitoring underwater currents, the mystery was solved. It was discovered that a previously unknown current moves northward from the Pacific Ocean and bumps into the North American continental shelf, pushing upward from the seabed rich minerals that nourish sea life.

WHO Attacks Smoking

◆ Calling for a worldwide ban on all kinds of tobacco advertising, the U.N.'s World Health Organization (WHO) recently sharply attacked smoking as a major source of lung cancer, heart disease, bronchitis and

damage to unborn babies. The WHO report recommended making a concerted effort to reduce smoking "to the status of a private activity of a minority of adults who are unable to give up the habit."

Disarmament Benefits

◆ When Costa Rica's constitution was adopted in 1949, it abolished the army, although providing for national defense. Not spending much money on costly modern armaments has enabled the country to provide things that other developing nations lack. For instance, about 90 percent of Costa Rica's people can read and write, a higher percentage than in any other Central American country. One official pointed out: "For the price of one out-dated fighter aircraft, we can finance the building and equipment of eight secondary schools." Malnutrition has been significantly reduced, and Costa Rica's per capita national income has increased faster than that of neighboring countries that maintain expensive armies. What could be done with the \$400 billion (U.S.) now spent each year on armaments world wide?

Sign of the Times

◆ The 1970's saw profound changes in marriage patterns. One evidence was that the number of couples living together without marriage increased sharply. Among those under 25 years of age in the United States, for example, the increase was more than eightfold in the first eight years of the decade. There was also a growing trend toward living alone. Divorce skyrocketed, so that now there is one divorce for every two marriages. This has sharply increased the number of families headed by a woman—from 5.6 million in 1970 to eight million in 1978, a 43-percent increase. Census Bureau officials estimate that as a result of so many marriage breakups nearly half of all children born

today will spend much of their childhood with only one parent. About 45 percent of all black children already live under such a handicap.

Dangerous Schools

◆ Schools in many metropolitan areas have become increasingly dangerous places. Crime and violence, against both teachers and students, mount. An evidence of this comes from Cleveland, Ohio, where, in the past three years, 45 pupils have been expelled for carrying firearms. Some of these students claimed that they had to carry the firearms for their own protection.

Teacher "Burn-Out"

◆ The problems that teachers face in the United States have caused many to suffer mental and emotional difficulties that they cannot resolve. As a result, increasing numbers of them are leaving the teaching profession. Included in the problems are an unwillingness of many students to learn, student violence, vandalism, inadequate salaries, and poor support from school boards and administrators. More than 110,000 teachers were physically attacked by students in the 1978-1979 school term. More than 25 percent suffered damage to their property. Willard McGuire, president of the 1.8-million-member National Education Association, said: "Thousands of teachers are in desperate need of help. Their school-induced psychological problems are not being solved." He stated that many teachers "can't sleep, often feel depressed and are physically run down." In one survey, a third of the nation's teachers said that they would not enter teaching if they were beginning their careers again.

Education Decline

◆ Today's American students are learning less than their parents did, says Paul Copperman, president of the Institute

of Reading Development in California. Testifying before a Senate committee, he stated: "Every generation of Americans has surpassed its parents in education, literacy and economic attainment—except the present one. For the first time in American history, the educational skills of one generation will not even approach those of their parents. Only about one quarter . . . will have the average level of academic skill recorded in the early 1960's."

Help for Lost Tickets

◆ Losing airline tickets involves more than just an inconvenience. Although replacement policy differs from airline to airline, in some cases new tickets must be purchased to continue a flight. And it may take many months to be reimbursed for the lost tickets. Airline officials advise: on a separate piece of paper keep the identification number of the tickets. Then if the tickets are lost and you must file a lost-ticket claim, you have the vital information needed. One airline official stated: "It's a relatively simple process to have a replacement ticket issued on the spot when the passenger can provide the number of the original ticket."

Four-footed "Lawn Mowers"

◆ In California, some homeowners live in areas of steep canyonland where the underbrush is difficult or impossible to cut with regular lawn mowers. After a rainy season, the underbrush dries and becomes a fire hazard. Cutting the weeds by hand and hauling them out is hard work, so some people are now using goats to do the job. It is said that two goats will eat all the weeds in a 100-foot-by-100-foot (about 30-m-by-30-m) area in just two weeks. During one widespread fire last year, it was reported that a home was saved because the owner had three goats that kept the sur-

rounding underbrush "mowed," while those around it were destroyed.

Marijuana Evidence Mounts

◆ The evidence against marijuana continues to mount. According to more recent research, marijuana can damage the brain, harm unborn children, cause infertility, damage the lungs and cause other problems. A medical conference in New York was told that the "most alarming" effects involve teen-agers "because they are in the process of sexual maturing so the damage may be irreversible." Dr. Nicholas A. Pace stated: "One hears over and over that marijuana is safer than alcohol. Nothing can be further from the truth." Unlike alcoholic beverages, which the body processes and eliminates in a matter of hours, marijuana components accumulate in fatty tissues and are not fully eliminated for weeks.

Giant Tumor Removed

◆ A woman weighing 380 pounds (172 kg) entered a California hospital complaining of abdominal pain and left a few days later weighing only about 180 pounds (82 kg). In the meantime, a team of seven doctors at the University of California Medical Center removed a 200-pound (90-kg) benign ovarian tumor in a 4½-hour operation. "The major problems were just technical," said the doctor who headed the team. "Removing a mass that large requires a careful watch of the cardiovascular system and a lot of painstaking dissection of the mass to avoid blood loss and damage." About 165 pounds (75 kg) of fluid was drained during the operation before removing 40 pounds (18 kg) of solid tissue. The woman had thought that she was just getting fat.

Youths Bigger, Not Better

◆ The Japanese Education Ministry's annual school

health survey of 340,000 school-children found that the children now are somewhat taller and heavier than youths 20 years ago. On the average, boys are two inches taller (5 cm) and nine and a quarter pounds (4.2 kg) heavier, while girls are one and a quarter inches (3.1 cm) taller and three and three quarters pounds (1.7 kg) heavier than in 1958. But in other respects, the 20-year trend was negative. The *Daily Yomiuri* reports that some 94 percent have tooth cavities and about one third are nearsighted. The nearsightedness was blamed on television. Among high-school students, nearsightedness climbed 21.1 percent and cavities 32.1 percent since 1958. Twenty years ago sweets were not so plentiful, nor was television so widespread as today.

Gas Shortage Benefit

◆ One benefit of the summer gasoline shortage in the United States was the low death toll on the highways over the July 4 holiday period. The National Safety Council had estimated that about 180 persons would be killed in highway accidents. The actual death toll was 98, due largely to fewer cars on the highways and the fact that many drivers voluntarily slowed down to get more gas mileage. In 1978, during a longer July 4 holiday period, 712 people were killed in highway accidents.

Dog Bites Costly

◆ Dogs may still be regarded as "man's best friend," but many dogs have a strange way of showing it. The Disease Control Center in Atlanta reports that at least one million

Americans are bitten by dogs each year. The cost of treating these dog bites is more than \$50 million annually. The disease center states that, among the most reported diseases and injuries, dog bites are surpassed only by gonorrhea.

Liquid Diet

◆ An International Labor Organization (ILO) survey reports that the British use more money budgeted for food to purchase alcoholic beverages than any other nation. The survey of 90 countries shows that the English use 18 percent of their food budget for alcohol, while Australia and Greenland use 16 percent; Ireland, 15 percent; Canada, 14 percent; Denmark, Sweden and France, about 9 percent; and the United States, 6 percent.

